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. CUMMING, *Surgeon General*

SANITARY REPORTS AND STATISTICS

rg Gen. B. J. LLOYD, *Chief of Division*

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urrent information of the prevalence and geographic d table diseases in the United States in so far as data are obt lera, plague, smallpox, typhus fever, yellow fever, and ot iseases throughout the world. (2) Articles relating to the ntrol of disease. (3) Other pertinent information regardi on and the conservation of the public health.

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PREVALENCE OF DISEASE

PUBLIC HEALTH REPORTS

VOL. 40 JANUARY 2, 1925 No. 1

ENDEMIC GOITER IN COLORADO

By ROBERT OLESEN, Surgeon, United States Public Health Service

GENERAL CONSIDERATIONS

Colorado, although not generally regarded as being in the so-called goiter belt, has its endemic goiter problem. According to the information thus far available, goiter apparently prevails to a much greater extent in some portions of the State than others. This fact was apparently first determined by the itinerant clinic of the Colorado Health Conference in 1923.[1] According to the findings of Dr. R. P. Forbes, medical director of the clinic, a high incidence of goiter was observed in the San Juan Basin, which is located in the southwestern portion of Colorado. According to Doctor Forbes there were 51 cases, or 56 per cent, of goiter among the 91 children examined in this section. The Health Conference, working in other sections of the State, failed to find a similarly high incidence of goiter.

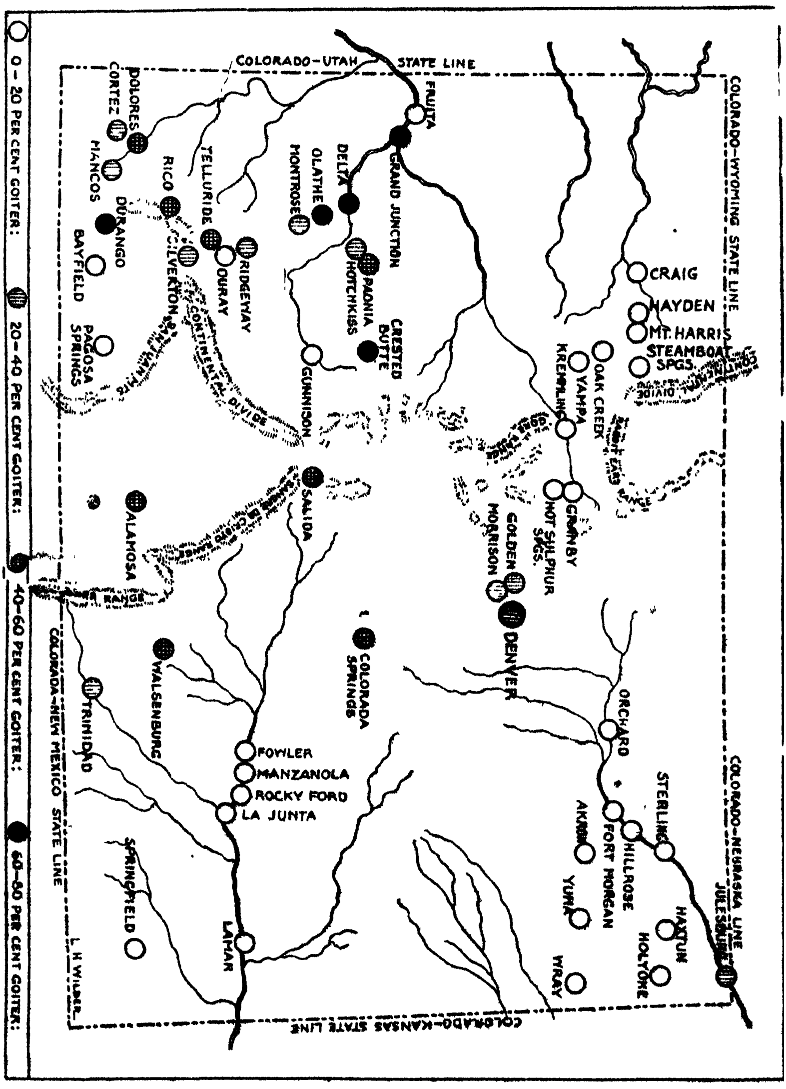
Realizing the necessity for obtaining additional information regarding goiter prevalence in the State, the secretary of the State board of health instructed Miss Matilda Harris, Red Cross nurse, to make thyroid surveys of eight representative communities in this southwestern portion. These surveys fully confirmed the previous findings of the Health Conference as to the unusual prevalence of endemic goiter in this section. At the same time a request was made of the Surgeon General of the Public Health Service for assistance in studying the goiter problem. In response to this request of the State board of health, the writer was instructed by the Surgeon General of the Public Health Service to visit Colorado and study the situation.

As preliminary thyroid surveys had been made in various parts of the State, a considerable amount of valuable information has been accumulated. Unfortunately, these surveys were made independently, different standards of classification were used, and the workers making the surveys were without the training that insures uniformity. The results of the surveys, therefore, must be somewhat

[1] An Endemic Goiter District in Colorado. An editorial in Colorado Medicine, vol. 20, No. 12, p. 328, December, 1923.

discounted. However, sufficient information has been obtained t make it plain that Colorado has its goiter problem and that add tional information is required if intelligent action is to be taken.

The area of greatest prevalence.—Goiter surveys are known to ha been made in approximately 57 localities in Colorado. Undoubtedl



Percentage prevalence of endemic goiter in certain Colorado cities and towns, as disclosed by surveys among children by different agencies

many additional studies unknown to the writer have been made and would prove valuable additions to the data at present available if they could be located. As the known surveys reached many sections of the State, the arrangement of results on the State map is both nteresting and illuminating. An examination of the accompanying

map, upon which the results of the various surveys have been spotted according to the amount of thyroid enlargement discovered, discloses an area of considerable prevalence on the western slope and particularly in the southwestern portion of the State. In general it may be said that persons living on the western slope in Colorado, that is, west of the Continental Divide, obtain drinking water from the mountains. In the eastern portion of the State water is usually obtained from wells. There are, of course, exceptions to these general statements. Likewise, it is problematical whether the source of the drinking water has any considerable bearing upon the occurrence of endemic goiter in Colorado except in so far as the water may be deficient in iodine. So far there are no records of analyses available which will afford any considerable information as to the iodine content of Colorado drinking waters.

The figures upon which the data given on the map were based were obtained from various sources, namely, the Colorado Health Conference; the Red Cross; the Colorado State Board of Health; Dr. O. R. Gillett, who is the health officer of Colorado Springs; Dr. A. L. Beagler, director of health education in the Denver public schools; and lastly, from the surveys of the Public Health Service.

Letter of inquiry to physicians.—In order to obtain as accurate an expression of opinion as possible concerning goiter prevalence in various parts of the State, communication was established with 263 city and county health officers by means of the following circular letter:

DENVER, COLO., *August 27, 1924.*

DEAR DOCTOR: To what extent does endemic goiter prevail in your community? And what is being done to prevent the occurrence of this form of thyroid enlargement? These are questions that are now interesting the Colorado State Board of Health.

In order that information concerning the distribution of endemic goiter in Colorado may be secured and the best means of applying prophylaxis outlined, the board has asked the United States Public Health Service to study the problem.

To the end that the greatest amount of useful information may be obtained, each local health officer is being asked to tell what has been done in his jurisdiction toward preventing goiter and curing existing enlargements.

I will appreciate it very much if you will tell me as soon as may be convenient whether you have made a goiter survey in your community and what were the results. The more detailed report you can render, the more acceptable it will be.

I should also like to know something of the methods of prophylaxis and cure being utilized in your community. Any collateral information you may possess concerning the goiter problem will likewise be very useful in formulating statewide procedure for the elimination of this easily prevented affection.

If no steps have been taken in your locality toward dealing with the goiter problem, will you please advise me to that effect?

While the replies to this letter demonstrated a lively and intelligent interest in goiter, it was manifest that very few thyroid surveys had been made under the direction of local health authorities. It was

also evident that knowledge of local endemic goiter prevalence was based upon the few patients seen in private practice. Obviously the average practice is not a criterion by which goiter prevalence may be judged. Particularly encouraging, however, were numerous requests for information concerning the procedure to be followed in making thyroid surveys and instituting prophylaxis. It would appear desirable, in view of the interest manifested, to outline a plan whereby a wider knowledge of endemic goiter prevalence in Colorado may be gained and the necessary prophylactic procedure indicated.

In the following sections of the report, therefore, there will be considered (1) the results of the goiter surveys already made, with an interpretation of the findings; (2) the technique of making a thyroid survey; (3) the prophylaxis and treatment of endemic goiter; and (4) the possibility of determining the cause of goiter in Colorado by making a more thorough canvass of the State.

1. Consideration of Available Data

As previously indicated, independent surveys have been made by several health agencies, namely, the department of health education of the Denver public schools, the Colorado Health Conference, the Red Cross in cooperation with the Colorado State Board of Health, the health department of Colorado Springs, and the United States Public Health Service. It is known that several goiter surveys have been made in the smaller cities, but the data are not available for the present report.

Survey in the Denver city schools.—Probably the largest of the goiter surveys so far made in Colorado is that available from the public-school system in Denver. This survey, which included 9,656 girls between the ages of 8 and 22, was made by Dr. Virginia Van Meter, under the direction of Dr. A. L. Beagler, director of health education in the Denver schools. This survey disclosed the presence of 2,643 thyroid enlargements among 9,656 girls, a percentage of 27.3. By classifying the thyroid enlargements according to the arbitrary designations of slight, moderate, and large, it was found that there were 2,443 slight, 197 moderate, and only 3 large goiters. The findings are tabulated according to the ages of the girls examined and the degrees of enlargement in Table 1.

Again demonstrating the fact that there is no racial immunity to endemic goiter among the colored people are the percentages of 27.3 among the white girls and 26.3 among the colored girls in the Denver schools. A total of nine adenomata were recorded during the Denver survey, this number representing 0.093 per cent of the total number of examinations made and being very much smaller than the number of goiters of this type usually encountered.

Table 1.—*Numbers, degrees, and percentages of thyroid enlargements among 9,493 white and 163 colored girls in the Denver, Colo., public schools: Survey by the Department of Health Education, Denver public schools*

Age	White girls							Colored girls						
	Degree of enlargement[1]			With thyroid enlargement		Normal	Total	Degree of enlargement[1]			With thyroid enlargement		Normal	Total
	1	2	3	Number	Per cent			1	2	3	Number	Per cent		
8	0	0	0	0	0.	9	9	0	0	0	0	0.	0	0
9	8	0	0	8	5.2	144	152	1	0	0	1	50.0	1	2
10	70	1	0	71	9.2	701	772	3	0	0	3	33.3	6	9
11	174	9	1	184	14.0	1,127	1,311	6	0	0	6	24.0	19	25
12	289	17	0	306	6.8	1,133	1,439	6	0	0	6	18.1	27	33
13	377	25	0	402	27.0	1,082	1,484	6	0	0	6	20.0	24	30
14	385	43	2	430	32.0	910	1,340	6	1	0	7	31.8	15	22
15	406	34	0	440	38.1	714	1,154	3	1	0	4	25.0	12	16
16	310	26	0	336	39.4	516	852	5	0	0	5	31.2	11	16
17	250	30	0	280	45.0	341	621	2	0	0	2	40.0	3	5
18	112	8	0	120	41.5	169	289	2	0	0	2	50.0	2	4
19	16	2	0	18	31.5	39	57	1	0	0	1	100.0	0	1
20	5	0	0	5	45.4	6	11	0	0	0	0	0.	0	0
21	0	0	0	0	0.	1	1	0	0	0	0	0	0	0
22	0	0	0	0	0.	1	1	0	0	0	0	0.	0	0
Total	2,402	195	3	2,600	27.3	6,893	9,493	41	2	0	43	26.3	120	163

[1] 1, Slight thyroid enlargement; 2, moderate thyroid enlargement, 3, marked thyroid enlargement.

Survey by the Red Cross in cooperation with State board of health.—This survey, which included eight cities located in the southwestern portion of the State, was made by Miss Matilda Harris, under the direction of the Colorado State Board of Health. In Table 2 it will be seen that 825 boys and 937 girls, a total of 1,762 children, between the ages of 9 and 20, were examined. Thyroid enlargements were found among 53.3 per cent of the boys and 73.4 per cent of the girls surveyed. The greatest amount of goiter among girls and boys was found in Delta, while the least among boys was found in Salida and the least among girls in Telluride.

In each of the eight cities surveyed the percentage of thyroid enlargements among boys was more than 39 per cent of the total number of children examined, while among the girls it was in excess of 62.5 per cent in each of the same places. To some extent these high prevalence rates were due to the inclusion in the examination of many older children near and at the age of adolescence, at which age the condition is most frequent.

In Table 3 the numbers and degrees of thyroid enlargements found in each of the eight cities surveyed are given. As may be expected, the prevalence of thyroid enlargement was greater among the girls than among the boys. Slight thyroid involvement was approximately the same among the boys and girls, although 238 more girls than boys were examined. Moderate enlargements were

four and one-half times more frequent among the girls, and marked enlargements ten times more frequent among the girls.

TABLE 2.—*Numbers, degrees, and percentages of thyroid enlargements among 825 boys and 937 girls surveyed in 8 localities in Colorado by the Red Cross and the Colorado State Board of Health*

Place	Boys							Girls						
	Degree of enlargement[1]			With thyroid enlargement		Normal	Total	Degree of enlargement[1]			With thyroid enlargement		Normal	Total
	1	2	3	Total	Per cent			1	2	3	Total	Per cent		
Alamosa	45	4	0	49	49 2	47	96	54	13	0	67	63.2	39	106
Crested Butte	52	4	1	57	57.5	42	99	65	15	0	80	80.0	20	100
Delta	81	6	0	87	71.8	34	87	50	65	0	115	88.5	15	130
Durango	52	12	0	64	67.9	32	96	59	22	1	82	73.2	30	112
Grand Junction	48	10	0	58	59.7	39	97	39	82	8	129	88.3	17	146
Salida	38	1	0	39	39.0	61	100	58	7	1	66	66.0	34	100
Telluride	47	1	0	48	47.0	54	102	53	9	0	62	59.6	42	104
Walsenburg	46	2	0	48	42.1	66	114	77	10	0	87	62.5	52	139
Total	409	40	1	450	53.3	375	825	455	223	10	688	73.4	249	937

[1] 1, Slight thyroid enlargement; 2, moderate thyroid enlargement; 3, marked thyroid enlargement

TABLE 3.—*Ages of 450 boys and 688 girls with thyroid enlargements, and degrees of enlargement: Survey by Red Cross and Colorado State Department of Health in 8 Colorado cities. (Ages of normal children not available)*

Age	Boys				Girls			
	Degree of enlargement[1]			Total	Degree of enlargement[1]			Total
	1	2	3		1	2	3	
9	0	0	0	0	1	0	0	1
10	19	1	0	20	31	1	0	32
11	32	0	0	32	33	2	0	35
12	61	3	0	64	55	23	1	79
13	79	8	1	88	87	48	2	137
14	86	14	0	100	106	48	3	157
15	69	9	0	78	82	53	1	136
16	43	4	0	47	49	27	2	78
17	11	1	0	12	7	11	1	19
18	3	0	0	3	2	5	0	7
19	3	0	0	3	2	4	0	6
20	3	0	0	3	0	1	0	1
Total	409	40	1	450	455	223	10	688

[1] 1, Slight thyroid enlargement, 2, moderate thyroid enlargement; 3, marked thyroid enlargement.

Survey in Colorado Springs.—A survey of 853 boys and 846 girls attending school in Colorado Springs disclosed the presence of thyroid enlargement among 326 boys and 378 girls. This survey was made under the direction of Dr. O. R. Gillett, health officer. The water supply of Colorado Springs is obtained from the mountains. According to the results obtained during this survey, 38.2 per cent of the boys and 44.6 per cent of the girls in this city have some

degree of thyroid enlargement. The numbers and percentages of thyroid enlargements found during the survey in Colorado Springs are given in Table 4.

TABLE 4.—*Numbers and percentages of thyroid enlargements found among 853 boys and 846 girls in Colorado Springs, Colo.*

	Examined	Enlargements	
		Number	Per cent
Boys	853	326	38.2
Girls	846	378	44.6
Total	1,699	704	41.4

Survey by Colorado Health Conference.—The Colorado Health Conference is made up of representatives from the State board of health, State Tuberculosis Association, extension division of the State University, and Child Welfare Bureau. A feature of this conference is an itinerant clinic that visits various sections of the State, making physical examinations of children and advising what shall be done when deviations from the normal are detected. During 1923 and 1924 Dr. R. P. Forbes, the clinic physician, devoted particular attention to the detection of thyroid enlargement among the children examined in a routine manner.

A summary of the goiter findings of the health conference is given in Table 5. Upon examination it will be seen that the prevalence of goiter is much higher in some places than others. Thus, 61.5 per cent of the children examined in Olathe, Montrose County, had some degree of thyroid enlargement. Paonia, with 52.6 per cent; Rico, with 43.4 per cent; and Dolores, with 40.9 per cent, are other cities with high goiter prevalence. From these higher figures the percentages decline in other localities until the rates, at least among some of the limited numbers examined, are zero.

TABLE 5.—*Numbers and percentages of thyroid enlargements among 1,634 boys and 1,640 girls in 39 localities in 20 Colorado counties: Survey by Colorado Health Conference*

Place	Boys: Enlargements: Number	Boys: Enlargements: Per cent	Boys: Normal	Boys: Total	Girls: Enlargements: Number	Girls: Enlargements: Per cent	Girls: Normal	Girls: Total
Arapahoe County:								
Littleton	1	3.7	26	27	3	8.5	32	35
Englewood	1	2.2	44	45	3	7.1	39	42
County total	2	2.7	70	72	6	7.8	71	77
Archuleta County:								
Pagosa Springs	0	0	37	37	1	2.4	40	41
Baca County:								
Springfield	2	4.2	45	47	7	14.6	41	48
Delta County:								
Hotchkiss	15	26.3	42	57	15	35.7	27	42
Paonia	20	45.4	24	44	29	59.1	20	49
Delta	13	37.1	22	35	10	31.2	22	32
County total	48	35.2	88	136	54	43.9	69	123
Dolores County:								
Rico	11	42.3	15	26	12	44.4	15	27
Grand County:								
Kremmling	0	0	31	31	0	0	34	34
Hot Sulphur Springs	0	0	21	21	0	0	30	30
Granby	0	0	17	17	0	0	16	16
Tabernash	0	0	25	25	0	0	36	36
County total	0	0	94	94	0	0	116	116
Gunnison County:								
Gunnison	0	0	19	19	0	0	29	29
Crested Butte	0	0	12	12	0	0	14	14
County total	0	0	31	31	0	0	43	43
La Plata County:								
Bayfield	4	11.7	30	34	3	12.5	21	24
Durango	1	2.4	41	42	5	11.3	39	44
County total	5	6.5	71	76	8	11.8	60	68
Logan County:								
Sterling	0	0	21	21	0	0	25	25
Mesa County:								
Fruita	13	38.2	21	34	16	66.6	8	24
Montezuma County:								
Mancos	11	16.6	55	66	25	35.2	46	71
Dolores	9	20.4	35	44	36	54.5	30	66
Cortez	4	8.5	43	47	26	53.0	23	49
County total	24	15.2	133	157	87	46.7	99	186
Montrose County:								
Montrose	8	18.1	36	44	7	30.4	16	23
Olathe	27	51.9	25	52	34	72.3	13	47
County total	35	36.5	61	96	41	58.5	29	70
Morgan County:								
Orchard	1	1.9	51	52	0	0	56	56
Fort Morgan	0	0	64	64	0	0	62	62
Hillrose	0	0	41	41	1	2.7	36	37
County total	1	.6	156	157	1	.6	154	155

Table 5.—*Numbers and percentages of thyroid enlargements among 1,634 boys and 1,640 girls in 39 localities in 20 Colorado counties: Survey by Colorado Health Conference*—Continued

Place	Boys				Girls			
	Enlargements		Normal	Total	Enlargements		Normal	Total
	Number	Per cent			Number	Per cent		
Otero County.								
Fowler	3	4.9	58	61	13	24.0	41	54
Manzanola	1	2.1	46	47	1	2.7	35	36
Rocky Ford	4	8.5	43	47	5	16.6	25	30
La Junta	4	7.5	50	54	4	7.6	48	52
County total	12	5.7	197	209	23	13.3	149	172
Ouray County:								
Ridgway	6	11.1	48	54	17	29.3	41	58
Ouray	1	2.4	40	41	7	18.4	31	38
County total	7	7.3	88	95	24	25.0	72	96
Phillips County:								
Haxtun	0	0	50	50	0	0	68	68
Holyoke	0	0	47	47	0	0	51	51
County total	0	0	97	97	0	0	119	119
Prowers County:								
Lamar	0	0	41	41	8	17.7	37	45
San Juan County.								
Silverton	5	10.8	41	46	17	30.9	38	55
Washington County:								
Akron	0	0	41	41	2	7.1	26	28
Yuma County:								
Wray	0	0	66	66	1	1.3	72	73
Yuma	0	0	51	51	3	5.6	50	53
County total	0	0	117	117	4	3.1	122	126
Total	165	10.1	1,465	1,630	311	23.3	1,333	1,644

Places with high prevalence rates among boys were Olathe, 51.9 per cent; Paonia, 45.4 per cent; Fruita, 38.2 per cent; and Delta, with 37.1 per cent. The percentages of thyroid enlargement were highest among the girls examined in Olathe, 72.3 per cent; Paonia, 59.1 per cent; Fruita, 66.6 per cent; and Dolores, 54.5 per cent. Of the 1,630 boys, 10.1 per cent, and of the 1,644 girls examined, 23.3 per cent were found to have some degree of thyroid enlargement. In Table 6 are given the ages of 165 boys and 311 girls with thyroid enlargement. The marked preponderance of goiter among girls, especially after the age of 15, is clearly shown. Doctor Forbes, of the Colorado Health Conference, has also shown, through his diagnoses of goiter in preadolescent children, that there is need for iodine prophylaxis during pregnancy so that children may be born goiter free. That the term "adolescent" is a misnomer when applied to endemic goiter is plainly indicated by the frequent occurrence of goiter in preadolescent children, as shown in Table 6.

gestive of exophthalmic goiter were encountered. Nodules in the thyroid substance, presumably adenomatous in type, were noted in 23 children, 14 girls and 9 boys. Among boys the age of greatest percentage involvement is at 12 years, while among the girls it is at 15 years, according to this survey. However, the numbers upon which the calculations are based are too small to permit the drawing of any but suggestive inferences.

In Table 8 the results of the thyroid examinations in each of the schools surveyed by the Public Health Service are set forth. In this table are shown the numbers, degrees, and percentages of thyroid involvement among 1,495 boys and 1,214 girls in eight localities. Among both boys and girls endemic goiter was most prevalent in Grand Junction, located in the western central portion of the State. Thyroid enlargement was least prevalent among the boys in the State Home for Dependent Children in Denver, probably because the ages of the children in this school are relatively less than those in the other places surveyed. More than 20 per cent of the boys and more than 30 per cent of the girls in the schools surveyed had some degree of thyroid involvement, the only exceptions being the two institutions surveyed in Denver, where the children are younger than those in the regular schools.

TABLE 8.—*Numbers, degrees, and percentages of thyroid enlargements among 1,495 boys and 1,214 girls surveyed in 8 localities in Colorado by the United States Public Health Service*

Locality and school or home	Boys								
	Degree of enlargement [1]					With thyroid enlargement		Normal	Total
	1	2	3	4	5	Total	Per cent		
Denver									
Orphan's Home	10	0	0	0	0	10	16.9	49	59
Home for Dependents	13	0	0	0	0	13	14.3	80	93
Golden, Industrial School	52	17	8	1	0	78	24.1	245	323
Grand Junction schools	81	30	6	0	0	117	35.1	216	333
Julesburg schools	22	4	1	0	0	27	24.1	85	112
Salida schools	34	5	1	0	0	40	23.2	132	172
Trinidad schools	81	26	4	1	0	112	27.7	291	403
Total	293	82	20	2	0	397	26.5	1,098	1,495

[1] 1, very slight; 2, slight; 3, moderate; 4, marked; 5, very marked.

TABLE 8.—*Numbers, degrees, and percentages of thyroid enlargements among 1,495 boys and 1,214 girls surveyed in 8 localities in Colorado by the United States Public Health Service*—Continued

Locality and school or home	Girls								
	Degree of enlargement[1]					With thyroid enlargement		Normal	Total
	1	2	3	4	5	Total	Per cent		
Denver:									
Orphan's Home	5	1	3	0	0	9	25.7	26	35
Home for Dependents	9	9	1	0	0	19	27.9	49	68
Grand Junction schools	53	61	25	11	0	150	45.3	181	331
Julesburg schools	36	9	4	0	0	49	36.0	87	136
Morrison, Industrial School	24	16	4	3	1	48	34.5	91	139
Salida schools	39	10	3	0	0	52	34.4	99	151
Trinidad schools	63	53	13	3	0	132	37.2	222	354
Total	229	159	53	17	1	459	36.8	755	1,214

[1] 1, very slight, 2, slight; 3, moderate; 4, marked; 5, very marked.

TABLE 9.—*Numbers and percentages of thyroid enlargement among 3,950 boys and 13,451 girls examined by 4 agencies in 56 localities in Colorado*

Agency	Boys				Girls			
	Number examined	Found normal	With enlarged thyroids		Number examined	Found normal	With enlarged thyroids	
			Number	Per cent			Number	Per cent
Denver, department of health education, Denver public schools					9,656	7,013	2,643	27.3
Health conference	1,630	1,465	165	10.1	1,644	1,333	311	23.3
U. S. Public Health Service	1,495	1,098	397	26.5	1,214	755	457	36.8
Red Cross and State board of health	825	375	450	53.3	937	249	688	73.4
Total	3,950	2,938	1,012	25.6	13,451	9,350	4,099	30.4

Summary of thyroid findings.—The combined results of the thyroid examinations made by the four principal agencies have been brought together in Table 9. Of the 3,950 boys examined, 1,012, or 25.6 per cent, had some degree of thyroid enlargement; 4,099, or 30.4 per cent of the 13,451 girls examined, also had enlarged thyroids. Compared with surveys made in other sections of the country the Colorado results disclose a much smaller difference between the goiter prevalence rates of boys and girls than is commonly found; but it is possible that the inclusion of more than three times as many girls as boys has influenced the results.

2. Method of Making a Thyroid Survey

The need for additional surveys.—While the data set forth in the preceding section are interesting, they are insufficient in quantity to warrant the drawing of hard and fast conclusions. The making of

degrees of thyroid enlargement are recommended because they cover more adequately the very great variations in size and enable the comparison of size at subsequent occasions: "Very slight," "slight," "moderate," "marked," and "very marked." The least degree of enlargement is termed "very slight," while the greatest is called "very marked." Adenomata, of course, constitute a sixth group. The factors entering into the determination of each degree of thyroid enlargement are as follows:

(1) *Very slight enlargement.*—This type is marked by simple involvement of the isthmial band, manifested by widening or thickening upon palpation. In this type there is either no bulging of the skin over the isthmus or the bulging is relatively slight. Upon palpating, however, it is possible to detect the thickened isthmus as a distinct enlargement.

Normal necks and many with very slight involvement of the thyroid gland, when viewed from the side, present a straight skin line, unbroken by swellings over the isthmus or other portions of the gland. Consequently, unless palpation is employed, decided thickenings of the isthmus will be overlooked. The thickened isthmus frequently imparts to the examining finger the impression of a piece of rubber tubing lying across the trachea. Moreover, this thickening will vary in size from an almost imperceptible ribbon to a tubular mass that will approximate a man's thumb in size. Inasmuch as decided thickenings are not constantly found in so-called normal thyroid glands, it is very likely that such deviations may safely be designated as "very slight" enlargements, though they may be physiological and temporary in character in some instances. In the Cincinnati survey *demonstrability* was made a positive condition of inclusion under the designation "very slight." Border-line cases, or those in which doubt existed as to classification, were discarded in the interest of accuracy.

As a means of detecting the isthmus, when it can neither be seen nor readily felt, Marine and Kimball advise that the finger or thumb be held against the trachea just below the cricoid cartilage while the person swallows. The writer has found that the enlarged isthmus may be brought into prominence beneath the palmar surface of the middle finger laid parallel over the accustomed location of the isthmus while the person being examined swallows.

(2) *Slight enlargement.*—Included under this heading are cases with visible bulging of the skin over the thyroid isthmus, causing a globular-appearing enlargement. Beginning involvement of the thyroglossal stalk or pyramidal lobe, which usually arises from the left side of the isthmus, is also included under this classification. When present, the thyroglossal stalk is readily detected. Following the suggestion of Marine and Kimball, only those stalks extending to the base of the thyroid cartilage should be included.

Slight enlargements are brought into prominence when the person swallows. Simple observation is an aid in determining the approximate size of the thyroid.

(3) *Moderate enlargement.*—Under this heading are included moderate involvements of the thyroglossal stalk, with or without increase in the size of the isthmus. Thyroids causing moderate bulging of the neck laterally from the enlarged lobes and moderate bulging of the skin anteriorly from the enlarged isthmus are also included in this class.

In this type the V-shaped angle between the sterno-cleidomastoid muscles is well filled by the enlarged thyroid, the principal protrusion being manifested anteriorly.

(4) *Marked enlargement.*—In this group are included thyroids causing marked lateral and anterior bulging. In addition to the overfilling of the V-shaped

angle between the muscles, there is also marked bulging at the external borders and beyond the muscles in this grade.

(5) *Very marked enlargements.*—This includes the extremely large, pronounced, and disfiguring types, the outlines of the lobes being plainly visible throughout.

(6) *Adenomas.*—Under this heading are included the thyroids containing nodular or lumpy masses of varying sizes and numbers.

Record card.—For the purpose of recording the information obtained during a thyroid survey, a printed record card is desirable, but not absolutely essential. If a card is used it should be prepared in such a manner as to make recording a simple matter, particularly for the examiner. It is also advantageous to provide a form upon which certain preliminary information may be placed by the teacher, nurse, or clerk. By recording the findings in code a great deal of time is saved and those examined are not able to learn the results of the examination until definite plans have been made for meeting the requirements. A card that has proved useful is shown herewith.

RECORD CARD

THYROID SURVEY, CINCINNATI, OHIO

Number---------- Date--------------------------

-------------------------- Name. -------- Age. ---------- Sex. -------- Color. ------ Weight.

------------------------------ School. ------------------------------ Grade.

------------------------------ Birthplace (city and State). ------------------------------ Residence during past year.

Physical development: Excellent, good, fair, poor.

Thyroid, 0 1 2 3 4 5 6.

Location: Diffuse isthmus right lobe left lobe.

The face of the card is divided into two parts by a double line, the upper portion containing such information as may be readily supplied by the pupil, teacher, nurse, or clerk prior to the arrival of the examiner, while the findings are recorded on the lower portion. Ruled lines should be provided on the back of the card in order that additional entries may be entered when reexaminations are made.

The preliminary information having been entered, each pupil presents his card to the examiner, who encircles the symbols or terms applicable to the findings. Zero (0) represents a normal thyroid gland, while the other numerals indicate successive degrees of enlargement. By examining boys and girls in separate groups rather than indiscriminately, the cards will be arranged according to sex at the end of the examination, a considerable aid when large numbers are

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being examined. In indicating the location of the thyroid enlargement the terms "isthmus" and "diffuse" may be used. The principal enlargement among those classed as very slight are usually found confined to the isthmus. In the larger goiters the increase is usually diffuse and rather evenly distributed throughout the gland. The terms "right lobe" and "left lobe" are used for recording asymmetry, the term expressing the greater degree of enlargement being encircled.

When a printed card is not available, a system of record keeping may be improvised very easily. Slips of paper may be distributed among the children to be examined, with instructions as to the preliminary information desired. Thus the name, age, grade, date, weight, height, and other data may readily be obtained in a few moments by having each child supply it. Then the child may bring his slip to the examiner, who can uniformly record the necessary notations of the result of the examination. While not as easily handled as thick cards, these slips of paper serve very well for recording the results of an examination of a limited number of children.

It is exceedingly important to secure and record the ages and sex of all apparently normal children who are examined during the course of a thyroid survey. Unless these facts are obtained it will be impossible to determine the percentage of children having thyroid enlargement at each age period.

3. The Remedy

Preparations for the campaign of prophylaxis.—Prior to inaugurating a campaign for the prevention of endemic goiter it is highly important that the people of a given community become conversant with the need for the prophylaxis and the mode of its administration. It is equally desirable that the possibility of reducing existing thyroid enlargements through appropriate medication be known and appreciated, not only by the lay people but by the physicians as well. It was particularly noticeable in Colorado that the physicians generally were greatly interested in goiter prevention and cure, but many were not sufficiently conversant with diagnosis and treatment of the condition to institute appropriate action. Therefore, the best results may be expected to follow a goiter campaign accompanied by due publicity.

After a thyroid survey has been made and the results have been tabulated, it will be found that two important sets of figures have become available; first, those relating to thyroid-normal individuals, and second, those dealing with persons with definite thyroid enlargement. Obviously, both of these groups are in need of protection and treatment. For the thyroid-normal individuals, prophylaxis should be made available, preferably under the auspices of the local health

department and in conjunction with the board of education. All school children with thyroid enlargement should be treated, preferably by family physicians. However, when physicians are indifferent to the need for systematic treatment, the health department should take the necessary steps to furnish appropriate medication.

Prophylaxis.—The rôle of iodine in maintaining thyroid equilibrium, so that the gland will be prevented from enlarging, and, furthermore, so that existing enlargements will be reduced in size, is too well known to require reiteration at this time. Suffice it to say that the favorable influence of iodine is now generally acknowledged. However, numerous objections, many of which are theoretical and apparently not susceptible of support, have been raised against the use of iodine for either the prevention or treatment of goiter. A number of instances in which exophthalmic goiter has apparently been caused by the administration of large doses of iodine or by the use of patent remedies containing large quantities of iodine have been reported. Investigation of these cases plainly shows that iodine has been used in unwarranted quantities and with no realization of its toxicity. It is also a matter for conjecture as to why there is no history of iodine ingestion in the vast majority of cases of exophthalmic goiter. Furthermore, it is a question whether the iodine goiters might not have occurred without the administration of iodine. All of these surmises, and even the well-authenticated instances in which iodine has apparently done damage, fail to disturb the fundamental fact that iodine, when administered in small dosage and under supervision, will definitely prevent thyroid enlargement and will also in very many instances cause the reduction in size of existing enlargements.

Individual oral prophylaxis, as advocated by Kimball, offers the most effective method of insuring to the thyroid gland, whether normal or enlarged, the amount of iodine required to insure its equilibrium. Unfortunately, however, this method has a limited utility, because only a small portion of the population can be reached. It becomes necessary, therefore, to employ methods which will not only prevent the indiscriminate dispensing of iodine but will also insure its ingestion in proper amounts by those in need of the medication. Iodine may, of course, be administered in various forms and by different methods with equal prospect of accompanying favorable effects. However, from a practical standpoint it is important to combine the elements of palatability, ease of administration, low dosage, and regularity of ingestion if the most favorable results are to be secured.

Iodized table salt.—An iodine compound such as sodium iodide, when combined with the sodium chloride in the proportion of 1 part of the former to 5,000 of the latter, appears to offer distinct advan-

tages as a wholesale prophylactic for the thyroid-normal individuals and also furnishes a small portion of the iodine required by those with thyroid enlargement. In the latter instance, of course, the small amount of iodine furnished in the salt must be supplemented by skilled medical supervision. It is difficult to believe that iodized salt, while providing sufficient iodine to keep the normal thyroid in equilibrium, will cause any untoward effects among persons with adenomatous goiters or among those with a tendency toward or actually present toxicity.

Treatment.—To determine the prevalence of thyroid enlargement in order, where the extent of the condition justifies, to secure prophylaxis and treatment, is manifestly an important function of a health department. In schools and universities it is possible to make surveys which will disclose such enlargements and cause the patients to be referred to suitable medical advisers. Unfortunately it is difficult to conduct surveys among adults which will bring to light all of those in need of treatment. Possibly, as annual physical examinations become more popular, it will be practicable to devote attention to an increasingly large number of adults with goiters. As previously indicated, the amount of iodine contained in iodized table salt, while sufficient to maintain the equilibrium of a normal thyroid, is not sufficient to alter a gland already enlarged. Therefore it becomes necessary to supplement this minute quantity of iodine in salt in a skillful and intelligent manner. When adenomatous thyroid tissue is present or there is either susceptibility or actual indication of toxicity, iodine should be withheld unless the patient is being treated in accordance with the principles laid down by Plummer, of Rochester.

In the treatment of endemic goiter low dosage of iodine should be adhered to because of the possibility of exciting a quiescent thyroid to hyperactivity. Marine recommends the use of 2 to 4 grams of desiccated thyroid in 0.2 gram daily doses as the most promising method of inaugurating curative treatment. After an interval of two weeks following this preliminary course of treatment he saturates the gland with iodine by giving 30 cubic centimeters of sirup of hydriodic acid or its equivalent in 1 or 2 cubic centimeter doses daily. He further recommends that this treatment be repeated every third or sixth month, explaining that the maximum reduction may be expected to occur between 6 and 12 months after the medication has begun.

For the treatment of thyroid enlargement in children the use of the iodine and chocolate tablet, containing small quantities of organic iodide, has been recommended, two or three tablets being given weekly or one tablet being prescribed daily for 30 days during alternate months. The same tablet, to the extent of one tablet a

week, may be used among school children for prophylactic purposes. Other preparations of iodine will likewise give good results, but low dosage must be adhered to lest, in some cases, untoward results be produced. Palatability is a most important consideration when the medication is to be continued over a long period. By acquiring a wholesome respect for the toxicity of iodine, as suggested by Kimball, and prescribing the remedy in milligrams instead of grams, the results will usually be satisfactory though not invariably successful.

In Colorado it is advisable that iodized table salt be used generally. This prophylactic will probably take care of the individuals with normally functioning thyroid glands. By means of surveys the children with thyroid enlargement should be sought out and placed under competent medical supervision. Special efforts should be made to prevent the occurrence of goiter in the new born by administering iodine (except in the presence of adenomatous or exophthalmic goiter) to prospective mothers during the first half of pregnancy. Desiccated thyroid, according to Marine, is dangerous during this period, but sirup of hydriodic acid, to the extent of 30 cubic centimeters in 1 and 2 cubic centimeter doses, will in many instances prevent so-called fetal adenomata. Should the interest of physicians be insufficient to insure the treatment of children with enlarged thyroids, such treatment should be provided by the local health department in cooperation with the board of education.

4. Possibility of Reducing Goiter Prevalence

Now that the ability of iodine to prevent endemic goiter has been definitely proved, it would appear that the information should be universally applied. That it has not been used more generally is due in part to the fact that the possibilities and methods are not thoroughly understood. As a preliminary to instituting prophylaxis, a thyroid survey is an admirable method of obtaining information and arousing interest in the subject both among lay and professional people. The information so far obtained regarding the prevalence of goiter in Colorado apparently indicates a focus of endemic goiter in the southwestern portion of the State. Whether or not this is an actual condition can be shown only by more intensive surveys made in a uniform manner. With additional data it would be possible to prepare a map of the State and indicate the varying degrees of prevalence in different portions. With this information it is conceivable that conditions apparently conducive to goiter prevalence, such as the use of certain water, the lack of fresh green vegetables, the proximity to mountains, or other interesting facts, might be brought to light. It is further conceivable that reliable knowledge concerning the quantity of iodine lacking or required in certain sections of the State might be gained in this manner.

Deaths and death rates from cancer and other malignant tumors in the registration area (exclusive of Hawaii) and in the registration States: 1922 and 1923—Cont'd.

Area	Number of deaths		Death rate per 100,000 population			
			Adjusted		Crude	
	1923	1922	1923	1922	1923	1922
Massachusetts	4,760	4,637	99.8	98.4	118.2	116.6
Michigan	3,516	3,411	81.7	81.1	88.4	87.7
Minnesota	2,506	2,317	96.1	90.0	100.8	93.9
Mississippi (total)	836	800	58.5	56.0	46.7	44.7
White	446	429	60.9	58.6	52.2	50.2
Colored	390	371	55.7	53.0	41.6	39.6
Missouri	3,176	2,947	80.5	75.0	92.2	85.9
Montana	333	343	65.6	69.6	54.5	57.8
Nebraska	1,072	1,091	77.5	79.5	80.4	82.5
New Hampshire	549	611	82.3	91.8	122.7	136.9
New Jersey	3,162	3,021	93.0	90.5	93.6	91.1
New York	12,247	11,697	102.6	99.2	112.9	109.2
North Carolina (total)	1,220	1,228	56.8	58.0	45.4	46.3
White	902	899	56.7	57.4	47.8	48.4
Colored	318	329	55.0	57.5	39.7	41.5
Ohio	5,784	5,549	81.9	79.9	94.6	92.3
Oregon	840	820	86.3	85.5	102.0	101.0
Pennsylvania	8,253	7,782	89.3	85.2	90.7	86.5
Rhode Island	717	751	100.9	106.9	114.4	121.1
South Carolina (total)	657	670	52.2	53.7	37.7	38.8
White	408	405	59.1	59.6	47.0	47.4
Colored	249	265	43.1	46.1	28.4	30.4
Tennessee (total)	1,192	1,146	54.9	53.1	49.8	48.2
White	960	936	53.7	52.8	49.3	48.5
Colored	232	210	58.8	53.0	52.2	47.0
Utah	316	316	80.7	82.1	66.3	67.4
Vermont	439	456	84.7	88.0	124.6	129.4
Virginia (total)	1,442	1,366	66.1	63.3	60.1	57.6
White	1,079	1,061	66.8	66.5	63.5	63.3
Colored	363	305	62.4	52.6	52.0	43.8
Washington	1,303	1,281	84.3	84.1	90.9	90.7
Wisconsin	2,533	2,514	81.4	81.7	92.5	92.8
Wyoming	116	97	(3)	(3)	54.8	46.9

[3] Rate not computed.

MORTALITY FROM DIABETES MELLITUS IN THE UNITED STATES, 1923

The Department of Commerce announces that there were 17,357 deaths from diabetes mellitus in 1923 in the death registration area, which comprised about 88 per cent of the total population of the United States. The death rate in 1923 was 17.9 per 100,000 population, as compared with 18.4 in 1922.

Of the 34 States which show adjusted rates for 1923 and 1922, 10 show higher rates in 1923. New York had the highest adjusted rate (24 per 100,000 population) in 1923 and Mississippi had the lowest (7.2).

Of the 9 States showing adjusted rates by color, Maryland had the highest rate (19.4) for the white population in 1923 and Virginia had the highest (13.5) for the colored, while Tennessee had the lowest rate (7.2) for the white population and Mississippi the lowest (4.6) for the colored.

Deaths and death rates from diabetes mellitus in the registration area (exclusive of Hawaii) and in the registration States

Area	Number of deaths		Death rate per 100,000 population			
			Adjusted [1]		Crude [2]	
	1923	1922	1923	1922	1923	1922
Registration area (exclusive of Hawaii)	17,357	17,182	(3)	(3)	17.9	18.4
Registration States (including District of Columbia)	17,153	16,989	(3)	(3)	17.9	18.5
California	794	824	17.2	18.3	20.9	22.3
Colorado	130	142	12.9	14.4	13.1	14.6
Connecticut	336	327	21.5	21.3	22.8	22.6
Delaware	31	37	12.1	14.5	13.5	16.2
Florida (total)	111	105	11.0	10.6	10.6	10.3
White	85	89	11.5	12.3	12.0	12.9
Colored	26	16	10.9	6.8	7.7	4.8
Georgia (total)	270	266	(3)	(3)	9.0	9.0
White	196	194	(3)	(3)	11.0	11.1
Colored	74	72	(3)	(3)	6.1	5.9
Idaho	50	67	(3)	(3)	10.6	14.6
Illinois	1,380	1,400	19.6	20.2	20.3	20.9
Indiana	607	580	16.7	16.1	20.1	19.4
Iowa	460	(4)	(3)	(4)	18.6	(4)
Kansas	318	356	15.8	17.7	17.7	19.9
Kentucky (total)	267	198	10.8	8.1	10.8	8.1
White	250	172	11.0	7.6	11.2	7.7
Colored	17	26	6.8	10.3	7.5	11.3
Louisiana (total)	178	168	12.1	11.6	9.6	9.2
White	127	132	13.4	14.1	11.0	11.6
Colored	51	36	9.3	6.6	7.3	5.2
Maine	175	196	16.5	18.6	22.5	25.3
Maryland (total)	296	302	18.2	18.8	19.7	20.3
White	271	265	19.4	19.1	21.6	21.3
Colored	25	37	10.7	15.9	10.0	14.9
Massachusetts	861	954	18.8	21.0	21.4	24.0
Michigan	714	696	17.0	17.0	17.9	17.9
Minnesota	439	527	17.5	21.3	17.6	21.4
Mississippi (total)	109	130	7.2	8.6	6.1	7.3
White	73	85	9.4	11.1	8.5	10.0
Colored	36	45	4.6	5.9	3.8	4.8
Missouri	593	625	15.5	16.4	17.2	18.2
Montana	58	71	11.4	14.4	9.5	12.0
Nebraska	293	303	21.6	22.5	22.0	22.9
New Hampshire	124	139	20.4	22.9	27.7	31.1
New Jersey	676	711	20.2	21.6	20.0	21.4
New York	2,786	2,882	24.0	25.1	25.7	26.9
North Carolina (total)	232	231	9.6	9.7	8.6	8.7
White	173	184	9.8	10.6	9.2	9.9
Colored	59	47	9.2	7.3	7.4	5.9
Ohio	1,193	1,096	17.4	16.3	19.5	18.2
Oregon	143	191	16.4	22.2	17.4	23.5
Pennsylvania	1,712	1,614	18.7	17.8	18.8	17.9
Rhode Island	149	144	21.7	21.2	23.8	23.2
South Carolina (total)	150	131	11.2	9.9	8.6	7.6
White	94	89	12.7	12.2	10.8	10.4
Colored	56	42	8.9	6.7	6.4	4.8
Tennessee (total)	168	184	7.3	8.1	7.0	7.7
White	139	153	7.2	8.0	7.1	7.9
Colored	29	31	7.3	7.8	6.5	6.9
Utah	77	75	18.9	18.7	16.1	16.0
Vermont	78	95	16.8	20.5	22.1	27.0
Virginia (total)	283	282	12.6	12.7	11.8	11.9
White	205	216	12.4	13.3	12.1	12.9
Colored	78	66	13.5	11.5	11.2	9.5
Washington	249	289	17.4	20.5	17.4	20.5
Wisconsin	546	542	18.6	18.7	19.9	20.0
Wyoming	21	23	(3)	(3)	9.9	11.1

[1] The adjusted rate makes allowance for the differences in the age and sex composition of the populations in the different States, and shows what the death rate would be if all States had the same proportion of males and females and the same proportion of the total population in each age group.
[2] The crude rate is based on total population and all deaths occurring within the given area.
[3] Rate not computed.
[4] Not added to registration area until a later date.

MORTALITY FROM TUBERCULOSIS IN THE UNITED STATES, 1923

The Department of Commerce announces that 90,732 deaths in 1923 were due to tuberculosis in the registration area of the United States, with a death rate of 93.6 per 100,000 population. This is a drop of 3.4 since 1922, in which year the rate was 97 per 100,000 population.

To permit better interstate comparisons for 1923 and 1922, adjusted rates, based on the standard million population, have been calculated. Of the 34 States which show adjusted rates for these two years, only nine show increases in the rates for 1923, clearly indicating that the general trend is still downward.

For nine States adjusted rates have been calculated separately for white and colored populations. In this group of States, Tennessee had the highest adjusted rate in 1923 for white population (129.3 per 100,000), Maryland the highest rate for colored population (290.7 per 100,000), and Mississippi had the lowest adjusted rates from tuberculosis for both white and colored (respectively, 51 and 159.7 per 100,000 population).

For the 25 States which show adjusted rates but not by color, Colorado had the highest rate (158.6 per 100,000 population) and Nebraska the lowest (34.2).

Deaths and death rates from tuberculosis (all forms) in the registration area (exclusive of Hawaii) and in the registration States: 1922 and 1923

Area	Number of deaths		Death rate per 100,000 population			
			Adjusted [1]		Crude [2]	
	1923	1922	1923	1922	1923	1922
Registration area (exclusive of Hawaii)	90,732	90,452	(3)	(3)	93.6	97.0
Registration States (including District of Columbia)	88,788	88,385	(3)	(3)	92.9	96.1
California	5,802	5,881	138.5	144.5	152.5	159.1
Colorado	1,669	1,789	158.6	172.6	168.5	183.3
Connecticut	1,329	1,358	87.0	90.6	90.0	93.7
Delaware	263	273	110.6	115.9	114.1	119.6
Florida (total)	1,082	1,032	104.0	101.4	103.4	100.8
White	494	446	69.2	64.3	69.7	64.8
Colored	588	586	171.0	171.5	174.0	174.5
Georgia (total)	2,737	2,613	(3)	(3)	91.3	88.0
White	1,013	963	(3)	(3)	56.9	54.9
Colored	1,724	1,650	(3)	(3)	141.6	135.9
Idaho	172	202	(3)	(3)	36.6	44.0
Illinois	5,572	5,620	78.5	80.1	82.1	83.8
Indiana	2,827	2,619	90.6	84.6	93.8	87.6
Iowa	1,101	(4)	(3)	(4)	44.6	(4)
Kansas	783	786	42.6	42.9	43.6	43.9

[1] The adjusted rate makes allowance for the differences in the age and sex composition of the populations in the different States, and shows what the death rate would be if all States had the same proportion of males and females and the same proportion of the total population in each age group.
[2] The crude rate is based on total population and all deaths occurring within the given area.
[3] Rate not computed.
[4] Not added to the registration area until a later date.

Deaths and death rates from tuberculosis (all forms) in the registration area (exclusive of Hawaii) and in the registration States: 1922 and 1923—Continued

Area	Number of deaths		Death rate per 100,000 population			
			Adjusted		Crude	
	1923	1922	1923	1922	1923	1922
Kentucky (total)	3,286	3,253	139.0	138.3	133.5	132.8
White	2,656	2,567	125.0	121.6	118.8	115.6
Colored	630	686	272.1	292.7	277.9	299.0
Louisiana (total)	2,111	2,198	119.7	125.7	114.1	119.8
White	769	789	70.9	73.7	66.7	69.4
Colored	1,342	1,409	198.5	208.0	192.5	201.7
Maine	627	654	77.7	81.2	80.7	84.4
Maryland (total)	1,882	1,930	122.1	127.2	125.0	130.2
White	1,152	1,255	87.9	96.9	91.7	101.1
Colored	730	684	290.7	273.7	292.8	275.7
Massachusetts	3,565	3,732	84.9	90.0	88.5	93.8
Michigan	2,848	2,644	70.0	66.5	71.6	68.0
Minnesota	1,840	1,714	72.0	68.0	73.6	69.5
Mississippi (total)	1,794	1,924	108.6	116.4	100.2	107.4
White	387	413	51.0	54.5	45.3	48.4
Colored	1,407	1,511	159.7	171.5	150.2	161.3
Missouri	3,186	3,258	88.4	90.7	92.5	94.9
Montana	395	383	59.1	59.0	64.6	64.5
Nebraska	461	483	34.2	36.1	34.6	36.5
New Hampshire	363	398	78.9	86.8	81.1	89.2
New Jersey	3,031	3,148	86.1	91.2	89.7	95.0
New York	10,611	10,695	92.0	93.8	97.9	99.8
North Carolina (total)	2,667	2,716	111.5	115.1	99.3	102.5
White	1,357	1,318	80.8	79.7	72.0	71.0
Colored	1,310	1,398	184.4	198.5	163.7	176.2
Ohio	5,251	5,159	81.8	81.8	85.8	85.8
Oregon	646	581	75.3	68.6	78.5	71.6
Pennsylvania	7,817	8,018	84.4	87.7	85.9	89.2
Rhode Island	628	588	96.7	91.5	100.2	94.8
South Carolina (total)	1,834	1,891	118.1	123.0	105.1	109.5
White	458	425	58.4	55.1	52.7	49.7
Colored	1,376	1,466	179.6	192.1	157.1	168.0
Tennessee (total)	3,624	3,520	160.6	157.1	151.4	148.1
White	2,352	2,195	129.3	121.8	120.7	113.7
Colored	1,272	1,325	289.2	290.8	286.4	296.8
Utah	178	194	38.6	42.9	37.3	41.4
Vermont	291	326	78.4	87.8	82.6	92.5
Virginia (total)	2,901	3,092	127.6	137.5	121.0	130.3
White	1,381	1,457	85.5	91.4	81.2	86.9
Colored	1,520	1,635	228.6	246.6	217.7	234.8
Washington	1,113	1,104	74.5	75.0	77.6	78.2
Wisconsin	1,836	1,928	65.9	70.0	67.0	71.2
Wyoming	77	86	([3])	([3])	36.3	41.6

[3] Rate not computed.

MORTALITY FROM TYPHOID FEVER IN THE UNITED STATES, 1923

The Department of Commerce announces that there were 6,635 deaths from typhoid fever in 1923 in the death-registration area, which comprised about 88 per cent of the total population of the United States. The death rate in 1923 from this disease was 6.8 per 100,000 population, by far the lowest ever shown for the registration area.

Of the 9 States showing adjusted rates by color, Maryland had the lowest rate (5.2) for the white population in 1923, and also the lowest (13.7) for the colored, while Kentucky had the highest rate for the white population (18.9) and Tennessee the highest rate for the colored (38.7).

Of the 25 States which show adjusted rates, but not by color, Colorado had the highest rate in 1923 (10.7 per 100,000 population) and Rhode Island the lowest (1 per 100,000 population).

Deaths and death rates from typhoid and paratyphoid fever in the registration area (exclusive of Hawaii) and in the registration States: 1922 and 1923

Area	Number of deaths		Death rate per 100,000 population			
			Adjusted [1]		Crude [2]	
	1923	1922	1923	1922	1923	1922
Registration area (exclusive of Hawaii)	6,635	6,981	(3)	(3)	6.8	7.5
Registration States (including District of Columbia)	6,490	6,861	(3)	(3)	6.8	7.5
California	154	172	4.0	4.7	4.0	4.7
Colorado	104	111	10.7	11.6	10.5	11.4
Connecticut	38	45	2.5	3.0	2.6	3.1
Delaware	19	25	8.5	11.3	8.2	10.9
Florida (total)	175	163	16.8	16.0	16.7	15.9
White	94	83	13.6	12.4	13.3	12.1
Colored	81	80	24.1	23.9	24.0	23.8
Georgia (total)	615	697	(3)	(3)	20.5	23.5
White	[illegible]	316	(3)	(3)	14.0	18.0
Colored	366	381	(3)	(3)	30.1	31.4
Idaho	28	41	(3)	(3)	6.0	8.9
Illinois	317	282	4.7	4.2	4.7	4.2
Indiana	214	235	7.3	8.1	7.1	7.9
Iowa	76	(4)	(3)	(4)	3.1	(4)
Kansas	111	110	6.3	6.2	6.2	6.1
Kentucky (total)	475	466	19.6	19.3	19.3	19.0
White	416	401	18.9	18.4	18.6	18.1
Colored	59	65	26.1	28.4	26.0	28.3
Louisiana (total)	268	329	14.6	18.0	14.5	17.9
White	147	160	13.1	14.5	12.8	14.1
Colored	121	169	17.2	24.0	17.4	24.2
Maine	52	49	6.6	6.2	6.7	6.3
Maryland (total)	100	106	6.6	7.1	6.6	7.1
White	65	73	5.2	5.9	5.2	5.9
Colored	35	33	13.7	13.0	14.0	13.3
Massachusetts	70	88	1.6	2.1	1.7	2.2
Michigan	203	192	5.2	5.0	5.1	4.9
Minnesota	60	54	2.3	2.1	2.4	2.2
Mississippi (total)	247	340	13.8	19.0	13.8	19.0
White	78	115	9.6	14.2	9.1	13.5
Colored	169	225	17.6	23.4	18.0	24.0
Missouri	300	335	8.9	10.0	8.7	9.8
Montana	16	21	2.5	3.4	2.6	3.5
Nebraska	41	50	3.1	3.8	3.1	3.8
New Hampshire	15	23	3.5	5.4	3.4	5.2
New Jersey	111	128	3.3	3.9	3.3	3.9
New York	318	323	2.9	3.0	2.9	3.0
North Carolina (total)	260	298	9.7	11.2	9.7	11.2
White	131	154	7.0	8.5	6.9	8.3
Colored	129	144	15.7	17.7	16.1	18.2
Ohio	311	333	5.0	5.4	5.1	5.5
Oregon	39	34	4.4	3.9	4.7	4.2
Pennsylvania	447	424	4.9	4.7	4.9	4.7
Rhode Island	7	8	1.0	1.2	1.1	1.3
South Carolina (total)	313	391	18.2	23.0	17.9	22.6
White	106	124	12.6	15.0	12.2	14.5
Colored	207	267	23.8	30.8	23.6	30.6
Tennessee (total)	502	483	20.9	20.2	21.0	20.3
White	327	345	16.9	18.0	16.8	17.9
Colored	175	138	38.7	30.3	39.4	30.9
Utah	41	22	8.5	4.6	8.6	4.7
Vermont	11	16	3.2	4.7	3.1	4.5
Virginia (total)	253	270	10.6	11.5	10.5	11.4
White	125	140	7.6	8.5	7.4	8.3
Colored	128	130	18.1	18.4	18.3	18.7
Washington	75	68	5.1	4.7	5.2	4.8
Wisconsin	61	80	2.1	2.9	2.2	3.0
Wyoming	15	27	(3)	(3)	7.1	13.1

[1] The adjusted rate makes allowance for the differences in the age and sex composition of the population in the different States, and shows what the death rate would be if all States had the same proportion of males and females and the same proportion of the total population in each age group.
[2] The crude rate is based on total population and all deaths occurring within the given area.
[3] Rate not computed.
[4] Not added to registration area until a later date.

DEATH RATES IN THE UNITED STATES, 1923

The Department of Commerce announces that the mortality rate in 1923 for the registration area was 12.3 per 1,000 population, against 11.8 in 1922. Seven States, Colorado, Idaho, Montana, Oregon, South Carolina, Utah, and Washington, show lower mortality rates for 1923 than for 1922.

But crude mortality rates are less reliable indexes than are rates refined for differences in the age and sex distribution of the population and for deaths of nonresidents.

Of the 6 States which show, by color, such refined rates for 1923, Maryland has the highest rate (12.6 per 1,000 population) for the white and also for the colored (22.8), and Mississippi the lowest (9.7 for the white and 15 for the colored).

Of the 24 other States which show refined rates, but not by color, the highest rate (13.3) appears for Delaware, and the lowest (8.7) for Montana.

Of the 11 cities of 100,000 population or more in 1920, which show, by color, refined rates for 1923, New Orleans has the highest rate (14.5 per 1,000 population) for the white and Atlanta for the colored (31.6), while Norfolk has the lowest rates for both the white and colored (8.3 and 18.7, respectively).

Of the 44 other cities of 100,000 population or more in 1920, which show refined rates, but not by color, the highest rate (15.7 per 1,000 population) appears for San Antonio, and the lowest (9.5) for Portland, Oreg.

Even these refined rates do not measure with certainty differences in the healthfulness of different localities, for such factors as race stock and occupations must not be overlooked.

Death rates from all causes (exclusive of stillbirths) per 1,000 population

Area	Refined rate*		Adjusted rate [1]		Crude rate [2]	
	1923	1922	1923	1922	1923	1922
Registration area	(3)	(3)	(3)	(3)	12.3	11.8
Registration States (including District of Columbia) (1920)	(4)	(4)	12.1	11.6	12.4	11.8
California	(4)	(4)	13.1	12.8	14.3	14.1
Colorado	12.3	13.3	12.4	13.5	12.4	13.5
Connecticut	11.4	11.4	11.4	11.4	12.0	12.0
Delaware	13.3	12.6	13.2	12.4	14.0	13.2
Florida (total)	13.3	12.4	13.9	12.6	13.5	12.2
White	10.7	10.3	11.5	10.6	11.8	10.9
Colored	19.0	16.8	19.3	17.0	17.0	15.0

* The refined rates have been found by first allocating deaths to areas of residence and computing rates, and then by applying to these rates the corrective factors necessary to change the crude rates to the adjusted rates, based on the standard million population of England and Wales, 1901.

[1] The adjusted rate makes allowance for the differences in the age and sex composition of the populations in different States, and shows what the death rate would be if all States had the same proportion of males and females and the same proportion of the total population in each age group.

[2] The crude rate is based on total population and all deaths occurring within the given area.

[3] Rate not computed.

[4] Data for nonresidents not available.

Death rates from all causes (exclusive of stillbirths) per 1,000 population—Contd.

Area	Refined rate		Adjusted rate		Crude rate	
	1923	1922	1923	1922	1923	1922
Georgia (total)	(3)	(3)	(3)	(3)	11.3	10.4
White	(3)	(3)	(3)	(3)	9.9	9.2
Colored	(3)	(3)	(3)	(3)	13.3	12.2
Idaho	(3)	(3)	(3)	(3)	7.1	8.1
Illinois	11.9	11.1	11.9	11.2	12.0	11.3
Indiana	11.7	10.8	11.6	10.8	12.9	11.9
Iowa	(3)	(4)	(3)	(4)	10.3	(4)
Kansas	10.0	9.6	10.1	9.7	11.0	10.6
Kentucky (total)	(6)	(6)	11.8	10.7	11.9	10.8
White	(6)	(6)	11.1	9.9	11.1	10.0
Colored	(6)	(6)	19.5	18.4	19.5	18.4
Louisiana (total)	13.5	12.6	13.5	12.6	12.1	11.3
White	11.1	10.5	11.2	10.5	10.0	9.4
Colored	17.3	16.0	17.3	16.0	15.5	14.4
Maine	12.1	11.9	12.1	11.9	15.0	14.7
Maryland (total)	14.2	13.1	14.4	13.4	14.7	13.6
White	12.6	11.7	12.8	11.9	13.3	12.4
Colored	22.8	20.8	22.9	20.7	21.4	19.4
Massachusetts	12.1	11.9	12.1	12.0	13.0	12.8
Michigan	11.8	10.8	11.8	10.7	12.4	11.3
Minnesota	9.6	9.0	9.9	9.3	10.1	9.5
Mississippi (total)	12.5	11.8	12.4	11.8	11.4	10.8
White	9.7	9.2	9.6	9.1	9.1	8.7
Colored	15.0	14.2	15.0	14.2	13.5	12.8
Missouri	11.6	10.7	11.6	10.7	12.2	11.2
Montana	8.7	9.3	8.6	9.2	8.0	8.6
Nebraska	9.3	9.1	9.2	9.1	9.5	9.4
New Hampshire	11.9	11.6	12.0	11.7	15.1	14.6
New Jersey	12.3	12.2	12.4	12.3	12.3	12.2
New York	12.7	12.7	12.8	12.7	13.0	13.0
North Carolina (total)	12.7	12.3	12.7	12.3	12.0	11.6
White	10.9	10.7	10.8	10.6	10.5	10.3
Colored	17.2	16.4	17.1	16.4	15.5	14.8
Ohio	11.4	10.5	11.4	10.5	12.3	11.3
Oregon	9.8	10.4	10.2	10.7	10.9	11.5
Pennsylvania	13.1	12.2	13.1	12.1	13.3	12.3
Rhode Island	13.2	12.6	13.2	12.6	13.8	13.1
South Carolina (total)	(6)	(6)	13.2	13.3	11.8	12.0
White	(6)	(6)	10.3	10.5	9.5	9.7
Colored	(6)	(6)	16.2	16.3	14.1	14.2
Tennessee (total)	(6)	(6)	12.3	11.2	11.9	10.8
White	(6)	(6)	10.6	9.7	10.4	9.5
Colored	(6)	(6)	19.8	17.4	18.7	16.4
Utah	9.6	10.6	9.9	10.9	9.5	10.4
Vermont	12.1	11.7	11.9	11.5	15.2	14.7
Virginia (total)	13.3	12.5	13.3	12.5	12.8	12.1
White	11.2	10.4	11.1	10.4	11.0	10.3
Colored	18.6	17.7	18.5	17.7	17.2	16.4
Washington	9.5	9.9	9.6	10.0	9.7	10.1
Wisconsin	10.1	9.5	10.0	9.5	10.7	10.1
Wyoming	(3)	(4)	(3)	(3)	10.3	9.3
Registration cities of 100,000 population or more in 1920:						
Akron	(5)	9.0	(5)	9.2	(5)	7.5
Albany	13.4	13.2	14.8	14.3	16.2	15.7
Atlanta (total)	19.2	16.3	20.3	17.7	18.1	15.7
White	13.8	11.8	15.2	13.6	13.4	12.0
Colored	31.6	26.5	32.1	27.1	28.7	24.2
Baltimore (total)	14.2	13.5	15.2	14.4	15.0	14.2
White	12.5	11.9	13.4	12.9	13.5	13.0
Colored	25.0	23.1	23.5	24.1	23.5	21.3
Birmingham (total)	13.6	13.4	18.2	16.0	15.6	13.7
White	11.6	9.5	14.3	12.4	12.0	10.4
Colored	22.1	19.5	24.5	21.8	21.1	18.8
Boston	13.5	13.3	15.0	15.0	14.9	14.9
Bridgeport	(5)	11.4	(5)	11.9	(5)	11.1
Buffalo	13.5	13.5	14.1	14.0	13.5	13.4
Cambridge	13.8	13.6	13.3	12.9	13.7	13.2
Camden	13.9	12.9	15.2	14.4	14.5	13.7
Chicago	12.6	12.0	12.7	12.2	11.7	11.2
Cincinnati	14.7	13.7	15.3	14.2	16.1	14.9
Cleveland	12.0	11.3	12.1	11.5	10.8	10.3
Columbus	13.8	11.7	15.1	13.0	15.3	13.2
Dallas (total)	11.8	12.6	13.7	14.5	11.9	12.6
White	10.4	10.9	12.2	12.7	10.6	11.0
Colored	20.4	23.2	22.8	25.3	20.0	22.2

[3] Rate not computed.
[4] Not added to registration area until a later date.
[5] Population not estimated.
[6] Data for nonresidents not available.

Death rates from all causes (exclusive of stillbirths) per 1,000 population—Contd.

Area	Refined rate		Adjusted rate		Crude rate	
	1923	1922	1923	1922	1923	1922
Dayton	11.3	10.9	11.8	11.1	11.8	11.0
Denver	(5)	14.9	(5)	15.7	(5)	16.0
Des Moines	(5)	(4)	(5)	(4)	11.4	(4)
Detroit	(5)	12.4	(5)	12.5	(5)	11.1
Fall River	13.9	16.2	14.1	16.5	13.7	16.0
Fort Worth (total)	(3)	(3)	(3)	(3)	8.3	9.9
White	(3)	(3)	(3)	(3)	7.9	9.3
Colored	(3)	(3)	(3)	(3)	11.0	13.6
Grand Rapids	11.0	10.5	11.2	10.5	11.7	11.0
Hartford	11.0	11.7	13.5	14.5	13.1	14.0
Houston (total)	(5)	14.9	(5)	15.4	(5)	13.6
White	(5)	12.6	(5)	13.2	(5)	11.7
Colored	(5)	22.3	(5)	22.8	(5)	19.7
Indianapolis (total)	14.1	12.8	14.6	13.4	14.4	13.2
White	13.1	11.8	13.6	12.5	13.7	12.5
Colored	22.7	20.5	22.5	20.6	19.7	18.1
Jersey City	13.3	13.4	13.1	13.0	12.0	11.9
Kansas City, Kans. (total)	14.3	12.7	15.6	13.7	14.9	13.1
White	(3)	(3)	(3)	(3)	13.6	11.9
Colored	(3)	(3)	(3)	(3)	22.6	20.5
Kansas City, Mo	14.2	14.6	15.1	15.2	14.4	14.6
Los Angeles	(6)	(6)	(5)	14.2	(5)	15.2
Louisville (total)	(6)	(6)	16.2	14.0	16.2	14.1
White	(6)	(6)	14.6	12.0	14.9	12.3
Colored	(6)	(6)	25.2	25.0	23.7	23.5
Lowell	14.8	13.6	14.7	13.5	14.6	13.4
Memphis (total)	18.3	16.4	21.6	19.3	19.9	17.8
White	12.9	11.8	16.6	15.1	15.6	14.1
Colored	28.5	24.9	31.1	27.1	27.5	24.0
Milwaukee	11.2	10.1	11.4	10.4	10.8	9.9
Minneapolis	10.0	9.8	11.3	10.9	11.1	10.8
Nashville (total)	17.7	16.1	19.3	17.2	18.6	16.6
White	14.4	14.1	16.2	15.3	15.5	14.7
Colored	25.7	20.8	26.8	21.8	26.0	21.2
New Bedford	12.9	12.8	12.7	12.8	12.2	12.3
New Haven	11.3	12.3	12.6	13.4	12.6	13.3
New Orleans (total)	18.2	17.2	18.8	17.8	17.7	16.7
White	14.5	14.0	15.1	14.6	14.5	14.0
Colored	29.4	26.8	29.8	27.3	26.7	24.5
New York	12.9	13.2	13.0	13.3	11.7	12.0
Newark	12.3	12.8	12.7	12.8	11.6	11.7
Norfolk (total)	12.1	12.9	13.1	13.8	11.5	12.1
White	8.3	9.2	9.4	10.2	8.3	9.0
Colored	18.7	18.9	19.5	19.8	17.1	17.3
Oakland	(6)	(6)	10.6	11.0	10.8	11.3
Omaha	13.9	12.9	14.0	14.0	13.2	13.1
Paterson	12.5	12.5	13.8	13.4	13.1	12.7
Philadelphia	14.1	13.3	14.1	13.5	13.8	13.2
Pittsburgh	15.4	14.2	16.9	15.3	15.8	14.3
Portland, Oreg	9.5	10.3	10.9	11.5	11.2	11.8
Providence	13.1	12.5	14.5	13.6	14.8	13.8
Reading	12.5	12.4	13.1	13.1	13.6	13.5
Richmond (total)	15.6	14.1	16.8	15.9	15.6	14.8
White	11.7	10.8	13.0	12.7	12.6	12.2
Colored	24.7	22.0	25.7	23.2	22.8	20.6
Rochester	10.9	11.2	11.5	11.7	11.6	11.8
St. Louis	13.6	12.5	14.1	13.0	13.6	12.5
St. Paul	11.5	10.5	13.1	11.9	12.9	11.7
Salt Lake City	10.2	10.2	12.7	12.7	12.4	12.4
San Antonio	15.7	16.1	16.3	17.0	14.8	15.4
San Francisco	(6)	(6)	13.5	14.0	13.6	14.1
Scranton	14.1	14.0	14.8	14.8	13.6	13.6
Seattle	(5)	9.4	(5)	10.1	(5)	9.6
Spokane	(5)	11.1	(5)	13.5	(5)	13.5
Springfield, Mass	10.8	10.4	12.0	11.5	11.9	11.4
Syracuse	11.9	11.9	12.7	12.4	13.0	12.7
Toledo	12.3	11.5	12.9	12.0	12.6	11.7
Trenton	13.5	15.4	14.6	16.3	14.0	15.6
Washington, D. C. (total)	14.6	14.4	15.4	14.8	14.9	14.4
White	11.5	11.8	12.1	12.2	12.3	12.4
Colored	24.7	22.0	25.7	22.9	22.9	20.5
Wilmington, Del	13.4	12.5	13.4	12.3	13.2	12.1
Worcester	11.9	11.5	12.9	12.7	13.1	13.0
Yonkers	11.7	12.6	11.2	11.7	10.1	10.7
Youngstown	12.1	12.0	12.6	12.6	11.3	11.3

[3] Rate not computed.
[4] Not added to registration area until a later date.
[5] Population not estimated.
[6] Data for nonresidents not available.

DIGEST OF CURRENT PUBLIC HEALTH COURT DECISIONS

Branding of butter substitutes.—(Court of Appeals of Maryland.) Section 136 of article 27 of the code of public general laws, volume 3, which requires the branding, when sold, of packages containing butter substitutes with the true name of the substitute, is not confined in its application to wholesale packages. (Hicken *v.* State, 126 Atl. 123.)

Compensation for occupational disease under workmen's compensation act.—(Supreme Court of Appeals of Virginia.) An occupational disease, which does not result naturally and unavoidably from an accident, is not compensable under the Virginia Workmen's Compensation act.

An employee, who was made ill by gas to which he was exposed while at work, suffered nose bleed, complained of a severe cold, and later was found to be afflicted with tuberculosis, did not suffer an accident within the meaning of the workmen's compensation act. (Clinchfield Carbocoal Corporation et al. *v.* Kiser, 124 S. E. 271.)

DEATHS DURING WEEK ENDED DECEMBER 20, 1924

Summary of information received by telegraph from industrial insurance companies for week ended December 20, 1924, and corresponding week of 1923. (From the Weekly Health Index, December 23, 1924, issued by the Bureau of the Census, Department of Commerce)

	Week ended Dec 20, 1924	Corresponding week, 1923
Policies in force	57, 951, 439	54, 340, 364
Number of death claims	11, 548	10, 090
Death claims per 1,000 policies in force, annual rate	10. 4	9. 7

Deaths from all causes in certain large cities of the United States during the week ended December 20, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923. (From the Weekly Health Index, December 23, 1924, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Dec 20, 1924		Annual death rate per 1,000 corresponding week, 1923	Deaths under 1 year		Infant mortality rate, week ended Dec. 20, 1924 [2]
	Total deaths	Death rate [1]		Week ended Dec 20, 1924	Corresponding week, 1923	
Total (64 cities)	6,919	13. 4	12. 5	826	[3] 761	
Akron	22			6	6	64
Albany [4]	32	14. 1	12. 9	3	3	68
Atlanta	70	16. 0	20. 1	12	8	
Baltimore [4]	247	16. 4	14. 3	31	28	92
Birmingham	87	22. 6	14. 9	12	3	
Boston	215	14. 4	15. 4	31	34	86
Bridgeport	33			6	4	96
Buffalo	149	14. 2	13. 8	17	18	72
Cambridge	29	13. 5	14. 5	1	4	17
Camden	27	11. 1	11. 3	5	6	82
Chicago [4]	723	12. 8	12. 2	100	75	93
Cincinnati	122	15. 6	16. 0	13	14	81
Cleveland	222	12. 7	10. 2	34	23	86
Columbus	76	14. 9	11. 0	7	4	66
Dallas	53	14. 7	11. 4	7	6	
Denver	73			10	9	
Des Moines	26	9. 3	7. 4	3	2	
Detroit	217			45	46	84
Duluth	16	7. 7	9. 3	5	3	109
Erie	26			2	4	41
Fall River [4]	31	13. 4	12. 5	6	7	84
Flint	11			4	3	69
Fort Worth	22	7. 7	9. 8	1	3	
Grand Rapids	41	14. 4	10. 7	2	1	31
Houston	52			12	4	
Indianapolis	94	14. 0	9. 7	5	10	37
Jacksonville, Fla	42	21. 4	19. 8	7	6	
Jersey City	86	14. 4	11. 8	15	17	107
Kansas City, Kans	34	15. 1	10. 8	1	2	19
Kansas City, Mo	93	13. 5	13. 3	13	13	
Los Angeles	211			18	14	56
Louisville	61	12. 3	16. 0	4	6	37
Lowell	29	13. 1	8. 2	4	6	71
Lynn	24	12. 1	13. 2	1	4	25
Memphis	93	28. 1	19. 9	7	3	
Milwaukee	96	10. 2	9. 3	20	15	95
Minneapolis	99	12. 4	11. 2	10	5	54

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1923. Cities left blank are not in the registration area for births.
[3] Data for 62 cities.
[4] Deaths for week ended Friday, December 19, 1924.

23309°—25†——3

Deaths from all causes in certain large cities of the United States during the week ended December 20, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923. (From the Weekly Health Index, December 23, 1924, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Dec. 20, 1924		Annual death rate per 1,000 corresponding week, 1923	Deaths under 1 year		Infant mortality rate, week ended Dec. 20, 1924
	Total deaths	Death rate		Week ended Dec. 20, 1924	Corresponding week, 1923	
Nashville [4]	44	18.6	19.1	3	4	----------
New Bedford	24	9.4	13.6	5	8	78
New Haven	43	12.7	10.9	4	5	53
New Orleans	141	18.0	17.4	13	10	----------
New York	1,481	12.8	10.9	163	151	66
Bronx Borough	164	9.8	10.0	17	15	60
Brooklyn Borough	516	12.3	9.9	64	55	68
Manhattan Borough	630	14.5	13.1	68	73	69
Queens Borough	136	12.8	7.8	11	7	55
Richmond Borough	35	14.0	10.2	3	1	55
Newark, N. J	99	11.6	9.9	16	11	75
Norfolk	31	9.8	10.5	5	4	89
Oakland	63	13.3	11.7	10	8	126
Oklahoma City	26	13.0	----------	3	----------	----------
Omaha	40	10.0	14.0	3	10	32
Paterson	45	16.7	8.2	3	3	51
Philadelphia	533	14.2	12.9	71	62	91
Pittsburgh	149	12.4	12.0	14	16	47
Portland, Oreg	58	10.9	12.6	2	3	21
Providence	78	16.7	12.3	8	6	65
Richmond	57	16.2	16.4	8	8	97
Rochester	74	11.9	----------	11	----------	87
St. Louis	195	12.5	13.8	12	21	----------
St. Paul	53	11.3	14.2	8	6	68
Salt Lake City [4]	29	11.8	16.1	4	5	80
San Antonio	64	17.4	16.1	16	5	----------
San Francisco	155	14.7	15.5	8	9	48
Schenectady	16	8.3	15.8	2	6	59
Seattle	69	----------	----------	4	3	89
Somerville	14	7.3	14.2	2	5	54
Spokane	25	----------	----------	3	3	66
Springfield, Mass	29	10.2	10.8	5	5	84
Syracuse	38	10.5	16.1	2	8	25
Tacoma	23	11.6	8.7	3	1	72
Toledo	55	10.4	13.4	7	4	68
Trenton	47	18.9	12.3	10	6	166
Utica	23	11.4	10.1	3	2	65
Washington, D. C	138	14.8	13.8	14	19	81
Waterbury	21	----------	----------	4	5	93
Wilmington, Del	20	8.7	14.2	2	9	45
Worcester	36	9.6	13.3	----------	5	----------
Yonkers	18	8.6	12.1	4	2	87
Youngstown	41	13.8	12.1	5	5	69

[4] Deaths for week ended Friday, December 19, 1924.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended December 27, 1924

ALABAMA

	Cases
Chicken pox	32
Diphtheria	23
Influenza	41
Malaria	22
Measles	33
Mumps	24
Pellagra	4
Pneumonia	87
Scarlet fever	23
Smallpox	78
Tuberculosis	20
Typhoid fever	8
Whooping cough	37

ARIZONA

Chicken pox	1
Diphtheria	6
Measles	51
Mumps	9
Scarlet fever	13
Smallpox	18
Trachoma	1
Tuberculosis	2
Whooping cough	2

ARKANSAS

Cerebrospinal meningitis	1
Chicken pox	54
Diphtheria	5
Influenza	81
Malaria	34
Measles	3
Mumps	3
Paratyphoid fever	1
Pellagra	4
Scarlet fever	20
Smallpox	10
Tuberculosis	10

ARKANSAS—continued

	Cases
Typhoid fever	13
Whooping cough	28

CALIFORNIA

Cerebrospinal meningitis:	
Los Angeles	1
San Francisco	1
Diphtheria	155
Influenza	12
Lethargic encephalitis:	
Los Angeles County	1
Measles	20
Poliomyelitis:	
Kern County	1
Los Angeles County	1
Los Angeles	1
Oakland	1
Porterville	1
San Francisco	1
Scarlet fever	127
Smallpox:	
Los Angeles	23
Los Angeles County	10
Oakland	9
Scattering	26
Typhoid fever	8

COLORADO

(Exclusive of Denver)

Chicken pox	49
Diphtheria	12
Measles	1
Mumps	19
Pneumonia	3
Poliomyelitis	1
Scarlet fever	27
Tuberculosis	25
Typhoid fever	1

CONNECTICUT

	Cases
Chicken pox	56
Diphtheria	50
German measles	14
Influenza	4
Lethargic encephalitis	1
Measles	27
Mumps	15
Ophthalmia neonatorum	1
Pneumonia (lobar)	26
Scarlet fever	210
Septic sore throat	1
Tetanus	1
Tuberculosis (pulmonary)	20
Typhoid fever	13
Whooping cough	23

FLORIDA

Diphtheria	28
Influenza	12
Malaria	36
Pneumonia	49
Scarlet fever	1
Typhoid fever	18

GEORGIA

Chicken pox	33
Diphtheria	11
Dysentery (bacillary)	2
German measles	26
Hookworm disease	17
Influenza	18
Mumps	19
Pneumonia	19
Scarlet fever	5
Tuberculosis	11
Typhoid fever	3
Whooping cough	1

ILLINOIS

Diphtheria:	
Cook County	69
Scattering	32
Influenza	10
Lethargic encephalitis:	
Cook County	3
Measles	132
Pneumonia	266
Poliomyelitis:	
Cook County	1
Scarlet fever:	
Cook County	157
Kane County	12
Will County	9
Scattering	92
Smallpox:	
Carroll County	[1] 48
Scattering	21
Tuberculosis	162
Typhoid fever:	
Cook County	26
Scattering	13
Whooping cough	151

INDIANA

Cerebrospinal meningitis:	
Howard County	1
Chicken pox	189

INDIANA—continued

	Cases
Diphtheria	32
Influenza	69
Measles	62
Mumps	7
Pneumonia	11
Poliomyelitis:	
Clay County	1
Scarlet fever	127
Smallpox:	
Marion County	21
Scattering	33
Tuberculosis	15
Typhoid fever	3
Whooping cough	11

IOWA

Diphtheria	10
Poliomyelitis	1
Scarlet fever	41
Smallpox	39
Typhoid fever	1

KANSAS

Chicken pox	157
Diphtheria	24
German measles	1
Measles	4
Mumps	149
Pneumonia	25
Scarlet fever	53
Smallpox	3
Tuberculosis	16
Typhoid fever	3
Whooping cough	10

LOUISIANA

Cerebrospinal meningitis	2
Diphtheria	12
Influenza	33
Pneumonia	37
Poliomyelitis	1
Rabies	1
Scarlet fever	7
Smallpox	7
Tuberculosis	17
Typhoid fever	21

MAINE

Chicken pox	29
Diphtheria	12
Influenza	12
Measles	1
Mumps	48
Pneumonia	8
Scarlet fever	25
Tuberculosis	3
Typhoid fever	4
Whooping cough	2

MARYLAND [2]

Chicken pox	65
Diphtheria	40
German measles	2
Influenza	62
Lethargic encephalitis	1
Measles	18

[1] Cases occurred in October.

[2] Week ended Friday.

MARYLAND—continued

	Cases
Mumps	8
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pneumonia (all forms)	48
Poliomyelitis	1
Scarlet fever	48
Septic sore throat	3
Tuberculosis	97
Typhoid fever	9
Whooping cough	31

MASSACHUSETTS

Cerebrospinal meningitis	1
Chicken pox	155
Conjunctivitis (suppurative)	18
Diphtheria	111
German measles	47
Influenza	17
Lethargic encephalitis	7
Measles	112
Mumps	48
Ophthalmia neonatorum	37
Pneumonia (lobar)	66
Scarlet fever	282
Septic sore throat	3
Tetanus	1
Tuberculosis (all forms)	66
Typhoid fever	12
Whooping cough	32

MICHIGAN

Diphtheria	58
Measles	129
Pneumonia	61
Scarlet fever	203
Smallpox	18
Tuberculosis	21
Typhoid fever	10
Whooping cough	35

MINNESOTA

Chicken pox	131
Diphtheria	37
Influenza	7
Lethargic encephalitis	1
Measles	11
Pneumonia	3
Poliomyelitis	1
Scarlet fever	182
Smallpox	111
Trachoma	5
Tuberculosis	59
Typhoid fever	5
Whooping cough	14

MISSISSIPPI

Diphtheria	15
Scarlet fever	1
Smallpox	23
Typhoid fever	2

MISSOURI

(Exclusive of Cape Girardeau and Independence)

Chicken pox	44
Diphtheria	73
Influenza	16

MISSOURI—continued

	Cases
Mumps	10
Penumonia	19
Scarlet fever	206
Smallpox	14
Tetanus	1
Tuberculosis	18
Typhoid fever	6
Whooping cough	7

MONTANA

Diphtheria	23
Scarlet fever	15
Smallpox	18
Typhoid fever	1

NEW JERSEY

Anthrax	1
Cerebrospinal meningitis	3
Chicken pox	124
Diphtheria	86
Influenza	18
Measles	76
Paratyphoid fever	2
Pneumonia	125
Scarlet fever	146
Smallpox	2
Typhoid fever	20
Whooping cough	175

NEW MEXICO

Chicken pox	21
Diphtheria	5
Influenza	1
Measles	16
Mumps	2
Pneumonia	15
Scarlet fever	10
Trachoma	1
Tuberculosis	6
Typhoid fever	4

NEW YORK

(Exclusive of New York City)

Diphtheria	80
Influenza	10
Lethargic encephalitis	4
Measles	120
Pneumonia	142
Poliomyelitis	4
Scarlet fever	168
Smallpox	7
Typhoid fever	28
Whooping cough	145

NORTH CAROLINA

Chicken pox	52
Diphtheria	12
Measles	3
Poliomyelitis	1
Scarlet fever	15
Smallpox	12
Typhoid fever	1
Whooping cough	36

OKLAHOMA

Diphtheria	12
Smallpox	3
Typhoid fever	22

OREGON

	Cases
Chicken pox	19
Diphtheria:	
Portland	18
Scattering	7
Mumps	6
Pneumonia	[1] 13
Poliomyelitis	3
Scarlet fever:	
Hood River County	9
Scattering	7
Smallpox:	
Portland	12
Columbia County	10
Scattering	2
Tuberculosis	11
Typhoid fever	2

SOUTH DAKOTA

	Cases
Chicken pox	12
Diphtheria	9
Pneumonia	4
Scarlet fever	24
Smallpox	10

TEXAS

	Cases
Cerebrospinal meningitis	1
Chicken pox	103
Dengue	16
Diphtheria	27
Dysentery	15
Influenza	239
Measles	96
Mumps	98
Ophthalmia neonatorum	2
Paratyphoid fever	5
Pellagra	5
Pneumonia	22
Scarlet fever	23
Smallpox	11
Tetanus	1
Tuberculosis	11
Typhoid fever	15
Whooping cough	19

VERMONT

	Cases
Chicken pox	53
Measles	12
Mumps	16
Pneumonia	2
Scarlet fever	12
Whooping cough	26

WASHINGTON

	Cases
Chicken pox	88
Diphtheria	30
Measles	18
Mumps	36
Poliomyelitis:	
King County	1
Scarlet fever	29
Smallpox	15
Tuberculosis	28
Typhoid fever	3
Whooping cough	1

WEST VIRGINIA

	Cases
Diphtheria	10
Scarlet fever	10
Smallpox	11
Typhoid fever	4

WISCONSIN

	Cases
Milwaukee:	
Chicken pox	24
Diphtheria	7
German measles	46
Influenza	2
Lethargic encephalitis	2
Measles	68
Mumps	19
Pneumonia	8
Scarlet fever	12
Smallpox	1
Typhoid fever	2
Whooping cough	4
Scattering:	
Chicken pox	214
Diphtheria	42
German measles	2
Influenza	27
Measles	33
Mumps	42
Pneumonia	16
Poliomyelitis	3
Scarlet fever	128
Smallpox	33
Tuberculosis	28
Typhoid fever	2
Whooping cough	44

WYOMING

	Cases
Chicken pox	22
Measles	1
Pneumonia	2
Scarlet fever	5
Smallpox	10

Reports for Week Ended December 20, 1924

DISTRICT OF COLUMBIA

	Cases
Chicken pox	39
Diphtheria	11
Influenza	1
Measles	3
Pneumonia	20
Scarlet fever	70
Tuberculosis	21
Typhoid fever	6
Whooping cough	17

NORTH DAKOTA

	Cases
Chicken pox	16
Diphtheria	6
Measles	20
Mumps	1
Pneumonia	7
Scarlet fever	39
Smallpox	7
Tuberculosis	2
Whooping cough	1

[1] Deaths.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
November, 1924										
Arizona	1	16	0	0	0	0	1	39	31	10
Delaware	0	25	0	0	1	0	0	14	0	2
Florida	0	95	75	71	2	11	0	15	1	50
Iowa	1	82	0	0	4	0	6	160	105	2
Maryland	1	248	141	3	82	0	7	199	0	61
Michigan	0	565	4	0	403	0	94	1,018	91	92
Minnesota	0	491	2	0	50	0	24	836	448	12
Mississippi	2	173	2,803	4,630	64	255	0	79	92	220
Oklahoma	0	94	15	15	2	3	1	88	13	126
Oregon	0	173	4	0	24	0	15	134	39	12
Pennsylvania	5	1,295	0	0	1,147	0	0	1,948	17	150
Rhode Island	0	57	4	0	0	0	2	97	3	10
West Virginia	2	236	101	0	70	0	0	325	35	76
Wisconsin	6	242	31	0	257	0	19	452	68	10

DYSENTERY ON STEAMSHIP

The Norwegian steamship *Maimanger,* from Tampico, Mexico, was reported at Quarantine, La., December 17, 1924, with 10 cases of dysentery on board. One case of dysentery was reported on the steamship *L. J. Drake,* which arrived at Quarantine, La., December 21, from Tampico.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended December 13, 1924, 35 States reported 2,055 cases of diphtheria. For the week ended December 15, 1923, the same States reported 3,056 cases of this disease. One hundred and three cities, situated in all parts of the country and having an aggregate population of more than 28,800,000, reported 1,058 cases of diphtheria for the week ended December 13, 1924. Last year, for the corresponding week, they reported 1,451 cases. The estimated expectancy for these cities was 1,462 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty States reported 1,416 cases of measles for the week ended December 13, 1924, and 9,496 cases of this disease for the week ended December 15, 1923. One hundred and three cities reported 706 cases for the week this year, and 2,513 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: Thirty-five States—this year, 3,490; last year, 3,464 cases. One hundred and three cities—this year, 1,728 cases; last year, 1,467 cases; estimated expectancy, 983 cases.

Smallpox.—For the week ended December 13, 1924, 35 States reported 789 cases of smallpox. Last year, for the corresponding

week, they reported 739 cases of smallpox. One hundred and three cities reported smallpox for the week as follows: 1924, 236 cases; 1923, 188 cases; estimated expectancy, 84 cases. These cities reported 46 deaths from smallpox for the week this year, 40 of which occurred at Minneapolis.

Typhoid fever.—Six hundred and four cases of typhoid fever were reported for the week ended December 13, 1924, by 34 States. For the corresponding week of 1923 the same States reported 299 cases. One hundred and three cities reported 237 cases of typhoid fever for the week this year, and 126 cases for the week last year. The estimated expectancy for these cities was 72 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 103 cities as follows: 1924, 954 deaths; 1923, 786 deaths.

City reports for week ended December 13, 1924

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported	Scarlet fever	
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported				Cases, estimated expectancy	Cases reported
NEW ENGLAND										
Maine:										
Lewiston	3	1	0	0	0	1	2	4	4	2
Portland	22	2	2	0	0	1	22	1	3	0
New Hampshire.										
Concord	0	1	0	0	0	0	0	2	1	0
Vermont:										
Barre	0	0	0	0	0	0	6	1	2	4
Burlington	6	1	0	0	0	0	0	0	1	0
Massachusetts:										
Boston	45	66	49	5	1	50	6	22	38	87
Fall River	2	5	3	1	1	1	1	2	2	4
Springfield	1	4	3	0	0	29	15	1	8	54
Worcester		5							11	
Rhode Island:										
Pawtucket	4	3	4	0	0	3	0	0	1	8
Providence	0	16	5	0	0	1	0	8	9	6
Connecticut:										
Bridgeport	3	10	4	0	0	0	1	0	6	11
Hartford	2	9	4	0	0	1	0	1	6	8
New Haven	21	8	2	0	0	8	0	2	6	38
MIDDLE ATLANTIC										
New York:										
Buffalo	38	36	12	3	4	33	10	22	23	21
New York	200	217	207	47	25	53	25	230	146	200
Rochester	8	15	0	0	1	11	49	2	11	30
Syracuse	8	18	3	0	0	1	3	5	14	9

City reports for week ended December 13, 1924—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported	Scarlet fever	
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported				Cases, estimated expectancy	Cases reported
MIDDLE ATLANTIC—continued										
New Jersey:										
Camden	6	6	6	0	0	5	0	5	3	3
Newark	44	22	16	5	1	28	4	15	16	47
Trenton	6	9	5	1	0	1	0	3	2	11
Pennsylvania.										
Philadelphia	147	82	75	--------	7	45	34	76	55	118
Pittsburgh	115	33	20	--------	5	61	41	39	25	71
Reading	4	5	1	0	0	0	13	0	1	3
Scranton	5	6	5	0	1	1	0	4	3	1
EAST NORTH CENTRAL										
Ohio:										
Cincinnati	25	20	12	1	7	3	0	10	13	11
Cleveland	107	47	30	4	4	3	11	23	33	27
Columbus	10	11	4	0	1	2	2	6	10	12
Toledo	32	18	14	0	0	2	0	6	15	16
Indiana:										
Fort Wayne	5	6	6	0	0	0	0	0	2	2
Indianapolis	95	22	7	0	1	1	9	10	10	13
South Bend	10	2	3	0	0	0	0	1	2	8
Terre Haute	13	4	0	0	0	0	--------	1	2	8
Illinois:										
Chicago	183	176	87	11	3	119	20	71	111	188
Cicero	17	4	4	0	0	11	0	0	1	6
Springfield	3	2	4	0	0	0	10	1	2	2
Michigan:										
Detroit	127	87	41	3	2	5	11	30	72	91
Flint	19	14	0	0	0	2	0	3	8	7
Grand Rapids	5	7	6	0	0	2	1	5	7	14
Wisconsin:										
Madison	7	2	1	0	--------	0	143	--------	2	3
Milwaukee	103	28	18	0	0	130	61	0	32	20
Racine	5	2	2	0	0	1	6	5	5	3
Superior	0	2	0	0	0	0	0	2	2	0
WEST NORTH CENTRAL										
Minnesota:										
Duluth	22	3	0	0	0	0	0	4	4	14
Minneapolis	92	23	33	0	1	6	5	4	28	62
St. Paul	38	20	13	0	0	2	22	6	16	22
Iowa:										
Davenport	4	2	1	0	--------	0	0	--------	1	0
Des Moines	0	6	9	0	--------	0	0	--------	9	4
Sioux City	11	3	2	0	--------	0	0	--------	3	0
Waterloo	7	2	0	0	--------	3	0	--------	4	1
Missouri:										
Kansas City	18	15	7	5	0	1	2	13	10	53
St. Joseph	2	5	2	0	1	1	0	1	3	1
St. Louis	37	86	54	0	0	4	4	--------	31	142
North Dakota:										
Fargo	15	1	1	0	0	0	3	0	1	4
Grand Forks	0	1	1	0	--------	0	0	--------	1	0
South Dakota:										
Aberdeen	11	--------	0	0	--------	0	0	--------	--------	2
Sioux Falls	0	1	2	0	0	0	0	0	2	0
Nebraska:										
Lincoln	11	2	0	0	0	0	0	0	2	1
Omaha	10	6	5	0	0	0	0	7	6	1
Kansas:										
Topeka	23	3	1	0	0	0	49	1	1	2
Wichita	17	10	7	0	0	0	0	4	4	0
SOUTH ATLANTIC										
Delaware:										
Wilmington	2	3	4	0	0	0	1	0	3	3
Maryland:										
Baltimore	64	35	43	48	1	3	4	30	23	50
Cumberland	--------	2	1	0	0	1	--------	1	1	0
Frederick	0	1	0	0	0	0	0	1	1	2
District of Columbia:										
Washington	38	19	21	3	2	4	0	18	18	41

City reports for week ended December 13, 1924—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported	Scarlet fever	
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported				Cases, estimated expectancy	Cases reported
SOUTH ATLANTIC—continued										
Virginia:										
Lynchburg	6	1	5	0	0	0	12	0	0	2
Norfolk	32	4	0	0	0	0	90	3	2	3
Richmond	9	10	10	0	1	5	0	5	6	5
Roanoke	2	4	1	1	2	1	0	0	1	1
West Virginia:										
Charleston	38	4	0	0	0	3	4	0	2	2
Huntington	0	2	0	0		0	0		2	4
Wheeling	17	2	1	0	0	1	1	0	1	3
North Carolina:										
Raleigh	10	2	0	0	1	0	0	1	1	2
Wilmington	2	1	0	0	0	0	10	2	1	2
Winston-Salem	8	2	3	0	0	0	0	0	1	2
South Carolina:										
Charleston	0	2	0	0	1	0	0	1	1	1
Columbia	0	1	1	0	0	0	16	4	0	0
Greenville	1	1	0	0	0	0	0	1	0	1
Georgia:										
Atlanta	2	5	8	3	1	0	0	16	5	4
Brunswick		0							0	
Savannah	0	2	0	6	0	0	1	3	2	0
Florida:										
St. Petersburg	0		1	0	0	0	0	0	0	0
Tampa	0	2	0	1	2	1	0	0	0	0
EAST SOUTH CENTRAL										
Kentucky:										
Covington	3	2	3	0	0	0	0	1	1	2
Lexington	2	1	1	0	0	0	0	2	1	2
Louisville	9	13	2	0	0	0	0	8	5	4
Tennessee:										
Memphis	8	10	3	0	1	0	4	9	4	10
Nashville	2	5	0	0	3	1	0	6	3	0
Alabama:										
Birmingham	11	6	9	1	0	0	0	13	4	3
Mobile	0	1	0	0	0	0	0	1	1	0
Montgomery	1	1	0	0	0	0	3	0	1	0
WEST SOUTH CENTRAL										
Arkansas:										
Fort Smith	3	2	0	0		0	0		1	0
Little Rock	1	2	0	0	0	0	0	3	2	3
Louisiana:										
New Orleans	4	12	17	7	4	0	0	11	5	11
Shreveport	2		0	0	1	0	0	1		0
Oklahoma:										
Oklahoma	1	3	2	0	0	0	0	4	3	2
Tulsa	4	5	2	0		2	0		2	1
Texas:										
Dallas	8	13	18	0	2	0	0	2	3	10
Galveston	0	2	0	0	0	0	0	1	0	0
Houston	2	4	4	0	0	0	0	8	2	7
San Antonio		3	4	0	0	0		5	1	2
MOUNTAIN										
Montana:										
Billings	7	1	0	0	1	0	0	0	1	0
Great Falls	1	1	3	0	0	3	0	0	1	4
Helena	0	0	0	0	0	0	0	1	1	0
Missoula		0	3	0	0	0		1	1	0
Idaho:										
Boise	7	1	0	0	0	0	0	0	1	1
Colorado:										
Denver	26	13	25	0	2	1	42	14	10	3
Pueblo	7	6	1	0	0	1	1	1	3	4
New Mexico:										
Albuquerque	7	1	0	0	0	0	0	1	1	1
Arizona:										
Phoenix	0		1	0	0	0	0	2		3
Utah:										
Salt Lake City	75	2	1	0	0	0	11	4	4	4
Nevada:										
Reno	0	0	0	0	0	0	0	0	0	1

City reports for week ended December 13, 1924—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported	Scarlet fever	
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported				Cases, estimated expectancy	Cases reported
PACIFIC										
Washington:										
Seattle	0	7	13	0		6	35		6	11
Spokane	13	5	12	0		26	0		6	3
Tacoma	3	3	2	0		1	0		3	2
Oregon:										
Portland	34	6	23	0	0	1	1	9	7	4
California:										
Los Angeles	53	34	41	0	1	5	15	20	16	27
Sacramento		2	4	1	0	1	0	3	2	4
San Francisco	32	28	22	4	0	4	19	10	10	28

Division, State, and city	Population July 1, 1923, estimated	Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
		Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND										
Maine:										
Lewiston	33,790	0	0	0	0	0	0	0	0	12
Portland	73,129	0	0	0	0	1	2	0	0	16
New Hampshire:										
Concord	22,408	0	0	0	0	0	0	0	0	8
Vermont:										
Barre	[1] 10,008	0	0	0	0	0	0	0	0	1
Burlington	23,613	0	0	0	0	0	0	0	0	4
Massachusetts:										
Boston	770,400	0	0	0	16	2	2	0	22	240
Fall River	120,912	0	0	0	3	0	0	0	5	26
Springfield	144,227	0	0	0	4	0	0	0	8	30
Worcester	191,927	0				0				
Rhode Island:										
Pawtucket	68,799	0	0	0	0	0	0	0	0	
Providence	242,378	0	0	0	8	1	1	1	0	75
Connecticut:										
Bridgeport	[1] 143,555	0	0	0	3	0	0	0	0	21
Hartford	[1] 138,036	0	0	0	0	0	0	0	1	27
New Haven	172,967	0	0	0	1	1	1	0	13	43
MIDDLE ATLANTIC										
New York:										
Buffalo	536,718	0	1	0	6	1	6	0	44	168
New York	5,927,625	0	0	0	[2] 88	13	109	16	103	1,485
Rochester	317,867	0	0	0	4	1	6	0	0	51
Syracuse	184,511	0	0	0	1	1	0	0	0	45
New Jersey:										
Camden	124,157	0	0	2	5	1	0	0	0	46
Newark	438,699	0	0	0	3	1	1	1	64	101
Trenton	127,390	0	0	0	5	0	0	0	10	41
Pennsylvania:										
Philadelphia	1,922,788	1	0	0	26	4	9	0	75	522
Pittsburgh	613,442	0	0	0	14	1	3	0	7	165
Reading	110,917	0	0	0	3	1	0	0	7	25
Scranton	140,636	0	0	0	4	0	0	0	4	
EAST NORTH CENTRAL										
Ohio:										
Cincinnati	406,312	1	0	0	9	0	6	0	5	116
Cleveland	888,519	2	0	0	17	1	2	0	17	191
Columbus	261,082	0	3	0	5	1	1	0	0	75
Toledo	268,338	0	1	0	1	1	4	1	13	[illegible]
Indiana:										
Fort Wayne	93,573	1	1	0	0	0	2	0	1	21
Indianapolis	342,718	3	4	0	1	0	0	0	5	98
South Bend	76,709	0	0	0	2	0	0	0	0	10
Terre Haute	68,939	0	6	0	1	0	0	0		17

[1] Population Jan. 1, 1920.

[2] Pulmonary only.

City reports for week ended December 13, 1924—Continued

Division, State, and city	Population July 1, 1923, estimated	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
EAST NORTH CENTRAL—continued										
Illinois:										
Chicago	2,886,121	2	1	0	36	5	21	5	174	667
Cicero	55,968	0	0	0	0	1	0	0	8	3
Springfield	61,833	0	0	0	1	0	0	0	0	15
Michigan:										
Detroit	995,668	3	0	0	12	2	6	0	9	246
Flint	117,968	1	1	0	2	0	0	0	2	18
Grand Rapids	145,947	0	0	0	1	1	5	0	5	26
Wisconsin:										
Madison	42,519	0	0			0	0		18	4
Milwaukee	484,595	2	0	0	5	0	0	0	15	85
Racine	64,393	1	2	0	0	0	0	0	1	14
Superior	[1] 39,671	1	0	0	1	0	0	0	0	13
WEST NORTH CENTRAL										
Minnesota:										
Duluth	106,289	1	0	0	2	0	0	0	1	18
Minneapolis	409,125	6	87	40	0	1	3	2	1	125
St. Paul	241,891	13	7	2	2	1	0	0	13	50
Iowa:										
Davenport	61,262	0	2			0	0		2	
Des Moines	140,923	0	0			0	0		0	
Sioux City	79,662	1	1			0	0		0	
Waterloo	39,667	0	8	1		0	2		1	
Missouri:										
Kansas City	351,819	2	0	0	3	1	1	0	0	95
St Joseph	78,232	1	0	0	0	0	0	0	0	
St. Louis	803,853	1	7	0	10	2	1	0	3	257
North Dakota:										
Fargo	24,841	1	0	0	0	0	0	0	0	6
Grand Forks	14,547	0	0	0	0	0	0	0	0	1
South Dakota:										
Aberdeen	15,829		0			0	0		0	
Sioux Falls	29,206	1	0	0	0	0	0	0	0	6
Nebraska:										
Lincoln	58,761	1	0	0	0	0	0	0	0	13
Omaha	204,382	2	13	0	2	1	1	1	0	56
Kansas:										
Topeka	52,555	1	0	0	1	0	0	0	4	25
Wichita	79,261	1	0	0	1	0	0	0	3	29
SOUTH ATLANTIC										
Delaware:										
Wilmington	117,728	0	0	0	1	1	0	0	0	38
Maryland:										
Baltimore	773,580	1	0	0	12	3	2	0	70	235
Cumberland	32,361	1	0	0	0	0	0	0		6
Frederick	11,301	0	0	0	0	1	0	0	0	3
District of Columbia:										
Washington	[1] 437,571	1	0	0	5	2	12	0	9	119
Virginia:										
Lynchburg	30,277	0	0	0	0	0	0	0	0	5
Norfolk	159,089	0	0	0	2	0	0	0	1	
Richmond	181,044	0	0	0	5	1	0	0	0	55
Roanoke	55,502	0	0	0	0	0	0	0	0	11
West Virginia:										
Charleston	45,597	0	9	0	0	0	0	0	0	14
Huntington	57,918	0	1			1	0		0	
Wheeling	[1] 56,208	0	0	0	2	1	1	0	1	15
North Carolina:										
Raleigh	29,171	0	1	0	0	0	0	0	7	6
Wilmington	35,719	0	4	0	0	1	0	0	8	7
Winston-Salem	56,230	1	3	0	3	0	0	0	0	18
South Carolina:										
Charleston	71,245	1	0	0	2	1	0	0	0	14
Columbia	39,688	0	0	0	1	0	0	0	2	23
Greenville	25,789	0	2	0	0	0	0	0	0	5
Georgia:										
Atlanta	222,963	2	0	0	4	0	0	0	0	80
Brunswick	15,937	0				0				
Savannah	89,448	0	0	0	6	1	1	0	1	35

[1] Population Jan. 1, 1920.

City reports for week ended December 13, 1924—Continued

Division, State, and city	Population July 1, 1923, estimated	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
SOUTH ATLANTIC—continued										
Florida:										
St. Petersburg	24,403	1	0	0	1	0	0	0	0	7
Tampa	56,050	0	0	0	1	1	1	0	0	14
EAST SOUTH CENTRAL										
Kentucky:										
Covington	57,877	0	0	0	1	0	0	0	0	13
Lexington	43,673	0	1	0	1	0	0	0	0	13
Louisville	257,671	0	2	0	3	1	2	0	2	81
Tennessee:										
Memphis	170,067	0	0	0	4	0	8	2	0	[illegible]
Nashville	121,128	1	4	0	6	0	0	0	3	62
Alabama:										
Birmingham	195,901	0	25	0	4	1	0	0	0	68
Mobile	63,858	1	0	0	0	0	0	0	0	13
Montgomery	45,383	1	0	0	0	0	0	0	0	10
WEST SOUTH CENTRAL										
Arkansas:										
Fort Smith	30,635	0	0			0	0		0	
Little Rock	70,916	0	0	0	3	1	1	0	0	
Louisiana:										
New Orleans	404,575	1	0	0	12	1	9	0	0	148
Shreveport	54,590		0	0	1		1	0	0	19
Oklahoma:										
Oklahoma	101,150	1	0	0	1	0	0	0	0	23
Tulsa	102,018	1	0			0	0			
Texas:										
Dallas	177,274	0	0	0	3	1	0	0	3	41
Galveston	46,877	0	0	0	0	1	0	0	0	9
Houston	154,970	0	3	0	2	0	0	0	1	55
San Antonio	184,727	0	0	0	12		0	0		58
MOUNTAIN										
Montana:										
Billings	16,927	1	0	0	0	0	0	0	1	10
Great Falls	27,787	1	0	0	0	0	0	0	0	5
Helena	[1] 12,037	0	0	0	0	0	0	0	0	9
Missoula	[1] 12,668	0	1	0	0	0	0	0		5
Idaho:										
Boise	22,806	0	0	0	0	0	0	0	0	7
Colorado:										
Denver	272,031	5	0	0	14	1	1	0	4	80
Pueblo	43,519	1	0	0	1	0	0	0	0	6
New Mexico:										
Albuquerque	16,648	0	0	0	1	0	0	0	0	5
Arizona:										
Phoenix	33,899	0	0	0	8		0	0	0	17
Utah:										
Salt Lake City	126,241	3	1	0	4	1	1	0	5	26
Nevada:										
Reno	12,429	0	0	0	0	0	0	0	0	2
PACIFIC										
Washington:										
Seattle	[1] 315,685	1	10			1	0		4	
Spokane	104,573	9	2			1	0		1	
Tacoma	101,731	1	1			0	0		0	
Oregon:										
Portland	273,621	6	9	0	4	1	1	0	0	
California:										
Los Angeles	666,853	1	22	1	27	3	5	0	14	242
Sacramento	69,950	1	4	0	2	0	0	1	0	30
San Francisco	539,038	0	0	0	11	1	1	2	17	149

[1] Population Jan. 1, 1920.

City reports for week ended December 13, 1924—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, est. expectancy	Cases	Deaths	Cases	Deaths
NEW ENGLAND											
Massachusetts:											
Boston	1	0	3	1	0	0	0	3	1	0	0
Fall River	0	0	0	0	0	0	0	1	0	0	0
Connecticut:											
Hartford	1	0	0	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC											
New York:											
Buffalo	0	0	1	1	0	0	0	0	0	0	0
New York	4	3	14	11	0	0	2	8	3	0	0
New Jersey:											
Newark	2	0	4	1	0	0	0	0	0	0	0
Pennsylvania:											
Philadelphia	0	0	3	1	0	0	0	0	0	0	0
EAST NORTH CENTRAL											
Ohio:											
Cleveland	2	1	0	0	0	0	0	0	0	0	0
Illinois:											
Chicago	0	0	2	1	0	0	0	0	0	0	0
Michigan:											
Detroit	1	0	1	0	0	0	0	2	0	0	0
Wisconsin:											
Milwaukee	0	0	2	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL											
Minnesota:											
Minneapolis	0	0	0	0	0	0	0	1	0	0	0
Missouri:											
St. Louis	1	1	0	0	0	0	0	0	0	0	0
North Dakota:											
Grand Forks	0	0	0	0	0	0	0	1	1	0	0
Kansas:											
Wichita	1	1	0	0	0	0	0	0	0	0	0
SOUTH ATLANTIC											
Maryland:											
Baltimore	0	0	1	0	0	0	0	0	0	0	0
Virginia:											
Richmond	0	1	0	0	0	0	0	0	0	0	0
South Carolina:											
Charleston	0	1	0	0	0	1	0	0	0	0	0
Columbia	0	0	0	0	0	2	0	0	0	0	0
EAST SOUTH CENTRAL											
Tennessee:											
Nashville	0	0	0	0	0	0	0	0	0	0	1
WEST SOUTH CENTRAL											
Texas:											
Houston	0	0	0	0	0	1	0	0	0	0	0
PACIFIC											
Washington:											
Seattle	0	------	0	------	0	------	0	3	------	0	------
Tacoma	0	------	0	------	0	------	0	1	------	0	------
Oregon:											
Portland	0	0	0	0	0	0	0	3	0	0	0
California:											
Los Angeles	0	0	0	0	0	0	0	0	0	1	0

The following table gives a summary of the reports from 105 cities for the 10-week period ended December 13, 1924. The cities included

in this table are those whose reports have been published for all 10 weeks in the Public Health Reports. Eight of these cities did not report deaths. The aggregate population of the cities reporting cases was estimated at nearly 29,000,000 on July 1, 1923, which is the latest date for which estimates are available. The cities reporting deaths had more than 28,000,000 population on that date. The number of cities included in each group and the aggregate population are shown in a separate table below.

Summary of weekly reports from cities, October 5 to December 13, 1924

DIPHTHERIA CASES

	1924, week ended—									
	Oct 11	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov 29	Dec. 6	Dec. 13
Total	883	936	988	965	1,128	1,112	1,115	970	1,058	1,063
New England	77	82	89	88	78	82	84	67	104	[1] 77
Middle Atlantic	209	259	228	235	304	312	314	284	336	345
East North Central	174	176	176	211	279	247	227	234	223	225
West North Central	126	136	149	127	128	147	160	148	149	128
South Atlantic	142	121	172	131	148	109	129	128	[2] 89	[3] 99
East South Central	28	42	41	27	35	26	32	21	[4] 21	17
West South Central	26	28	36	40	46	59	45	27	31	45
Mountain	14	18	23	28	38	36	27	17	[5] 18	33
Pacific	87	74	74	78	72	94	97	44	87	94

MEASLES CASES

	Oct 11	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov 29	Dec. 6	Dec. 13
Total	130	193	197	241	310	322	400	364	613	706
New England	21	25	28	32	36	41	49	59	66	[1] 104
Middle Atlantic	56	97	92	112	144	135	154	156	207	238
East North Central	22	42	55	70	91	102	131	114	269	279
West North Central	5	7	3	7	7	10	14	5	12	17
South Atlantic	10	4	2	6	13	4	11	7	[2] 10	[3] 19
East South Central	2	1	0	0	2	2	2	0	[4] 0	1
West South Central	2	2	1	0	1	1	1	2	0	0
Mountain	0	5	2	3	2	4	4	3	[5] 2	5
Pacific	12	10	14	11	14	23	34	18	47	43

SCARLET FEVER CASES

	Oct 11	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov 29	Dec. 6	Dec. 13
Total	774	795	938	1,021	1,153	1,097	1,238	1,283	1,488	1,735
New England	80	99	121	96	114	135	155	176	219	[1] 235
Middle Atlantic	154	168	213	298	354	330	365	389	389	513
East North Central	178	176	214	256	270	262	303	307	346	415
West North Central	218	227	253	216	225	220	228	245	297	302
South Atlantic	46	48	57	57	67	58	72	63	[2] 83	[3] 124
East South Central	21	11	14	24	29	14	17	10	[4] 28	19
West South Central	17	16	17	15	25	18	14	20	27	35
Mountain	15	19	13	19	19	20	24	15	[5] 31	17
Pacific	36	31	36	40	50	40	60	58	68	75

SMALLPOX CASES

	Oct 11	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov 29	Dec. 6	Dec. 13
Total	72	99	134	134	138	192	188	213	319	236
New England	0	0	0	0	0	0	0	0	0	[1] 0
Middle Atlantic	3	0	5	2	4	0	5	9	9	1
East North Central	21	30	19	16	6	11	14	19	13	18
West North Central	21	27	64	70	82	100	85	114	201	123
South Atlantic	2	0	3	1	3	7	6	3	[2] 22	[3] 19
East South Central	2	15	11	9	8	12	21	13	[4] 20	31
West South Central	0	3	2	2	2	8	6	7	4	3
Mountain	0	2	3	0	1	7	2	1	[5] 2	2
Pacific	23	22	27	34	32	47	49	47	39	39

[1] Figures for Worcester, Mass., estimated. Reports not received at time of going to press.
[2] Figures for Norfolk, Va., and Brunswick, Ga., estimated.
[3] Figures for Brunswick, Ga., estimated.
[4] Figures for Memphis, Tenn., estimated.
[5] Figures for Reno, Nev., estimated.

Summary of weekly reports from cities, October 5 to December 13, 1924—Continued

TYPHOID FEVER CASES

	1924, week ended—									
	Oct 11	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13
Total	214	159	136	106	124	107	133	161	255	237
New England	16	8	6	5	7	5	5	9	12	[1] 6
Middle Atlantic	45	47	40	35	23	33	46	90	140	134
East North Central	15	17	14	11	14	11	15	10	30	43
West North Central	16	11	5	9	9	3	8	2	4	8
South Atlantic	23	20	22	13	21	10	14	15	[2] 27	[3] 17
East South Central	17	12	21	12	14	20	14	19	[4] 18	10
West South Central	15	12	12	6	18	11	13	8	13	11
Mountain	58	23	10	5	9	8	2	2	[5] 1	2
Pacific	9	9	6	10	9	6	16	6	10	6

INFLUENZA DEATHS

Total	21	20	18	35	38	43	41	56	63	91
New England	1	1	1	1	5	0	2	2	7	[1] 2
Middle Atlantic	13	11	9	21	23	17	17	15	21	43
East North Central	4	3	5	5	5	5	7	15	13	18
West North Central	0	2	0	0	0	0	0	3	2	2
South Atlantic	1	1	2	3	3	4	6	7	[2] 5	[3] 11
East South Central	0	1	0	1	1	4	2	5	[4] 4	4
West South Central	1	1	0	3	1	7	3	5	6	7
Mountain	1	0	0	0	0	1	4	2	[5] 3	3
Pacific	0	0	1	1	0	5	0	2	2	1

PNEUMONIA DEATHS

Total	494	497	479	593	636	676	646	701	832	863
New England	39	28	27	42	33	35	38	58	51	[1] 45
Middle Atlantic	217	221	227	270	305	294	301	300	371	397
East North Central	84	90	77	95	109	116	122	126	155	168
West North Central	25	23	20	28	29	32	36	34	29	40
South Atlantic	50	50	65	87	75	83	57	83	[2] 91	[3] 86
East South Central	15	19	13	21	24	46	36	43	[4] 39	38
West South Central	31	16	17	21	22	34	20	21	32	35
Mountain	15	22	16	6	8	10	15	13	[5] 23	21
Pacific	18	28	17	23	31	26	21	23	41	33

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28, 898, 350	28, 140, 934
New England	12	12	2, 098, 746	2, 098, 746
Middle Atlantic	10	10	10, 304, 114	10, 304, 114
East North Central	17	17	7, 032, 535	7, 032, 535
West North Central	14	11	2, 515, 330	2, 381, 454
South Atlantic	22	22	2, 566, 901	2, 566, 901
East South Central	7	7	911, 885	911, 885
West South Central	8	6	1, 124, 564	1, 023, 013
Mountain	9	9	546, 445	546, 445
Pacific	6	3	1, 797, 830	1, 275, 841

[1] Figures for Worcester, Mass., estimated. Reports not received at time of going to press.
[2] Figures for Norfolk, Va., and Brunswick, Ga., estimated.
[3] Figures for Brunswick, Ga., estimated.
[4] Figures for Memphis, Tenn., estimated.
[5] Figures for Reno, Nev., estimated.

TREASURY DEPARTMENT

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SPECIAL ARTICLES

The Present Pandemic of Plague
Essential Preventive Factors in Pellagra-Preventive Diet
Death Rates of Mothers from Childbirth in 1923

WASHINGTON
GOVERNMENT PRINTING OFFICE
1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. R. J. LLOYD, *Chief of Division*

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PUBLIC HEALTH REPORTS

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THE PRESENT PANDEMIC OF PLAGUE

In general, those unfamiliar with the natural laws governing the occurrence, propagation, and spread of pestilences are still very apt to view the appearance of such diseases as mysterious, inexplicable, and more or less providential. It is not realized that man himself is usually, in one way or another, consciously or unconsciously, directly or indirectly, responsible for this spread. Still less is it realized that the application of scientific as well as common sense methods of control will often avert disaster both from a commercial and a humanitarian standpoint.

Plague is a disease as old, perhaps, as the human race. Almost the earliest human records contain references to plague. It is mentioned in the ancient Sanskrit and Egyptian writings and in the Bible. In the fifth and sixth chapters of the First Book of Samuel there is an account of an epidemic of bubonic plague. Forty-one epidemics of plague are recorded as having occurred before the beginning of the Christian era. During the 1,500 years after the birth of Christ there are records of 109 epidemics, and from 1500 to 1720 there are reported 45 pandemics of the disease.

It is impossible to estimate the number of people who have died of plague in ages past, though the figures certainly run into hundreds of millions. It is estimated that more than 10,000,000 human beings have died of plague in the last 25 or 30 years.

The present pandemic of plague began in China in 1894. In 1896 India, Japan, Asiatic Turkey, and European Russia were infected. In 1898 the disease spread to Madagascar and Mauritius, and in 1899 the disease appeared in Arabia, Persia, the Straits Settlements, Austria, Portugal, British South Africa, Egypt, the French Ivory Coast, and Portuguese Africa. About the same time plague appeared in Argentina, Brazil, Paraguay, and the Hawaiian Islands, and in 1900 the disease appeared for the first time in the United States, in San Francisco, Calif. In addition to its having appeared in other South American and European countries since 1900 it may be said that the disease reached Seattle in 1907, and, although there were only seven human cases at that city, plague-infected rats were found off and on for 10 years. In San Francisco the disease appeared several times in epidemic form.

In 1914 plague appeared in New Orleans; in 1920 in Beaumont and Galveston, Tex. In 1904 it was discovered that plague infection had spread from the rats to the ground squirrels in California, and it has been among these ground squirrels ever since.

During the calendar year 1923 plague was reported to the Surgeon General of the Public Health Service as being present in the following countries, namely: Algeria, Australia, Azores, Brazil, British East Africa, Canary Islands, Ceylon, Chile, China, Ecuador, Egypt, France, Greece, Hawaii, India, Indo-China, Iraq, Japan, Java, Madagascar, Mauritius Island, Mexico, Morocco, Palestine, Peru, Portugal, Portuguese West Africa, Russia, Siam, Siberia, Spain, Straits Settlements, Syria, Tunis, Turkey, Union of South Africa, and Venezuela.

Some of these countries have been plague infected for many years and no doubt will remain so for many years to come, possibly for centuries even. The most common way in which plague spreads from one country to another, from one city to another, is by means of rats on board ship. With the present methods of ship construction and of wharf construction it is practically impossible to eliminate all danger of the importation of plague on vessels without paralyzing commerce to an extent that would be perhaps as disastrous as plague itself.

When the rats of a large city become infected with plague, it often takes many years to eradicate the disease. The fact that there are no human cases does not mean that there may not be rat infection. In at least one city there is a record of rat infection extending over a period of 10 years without the occurrence of a human case during that time. It should be said that an active campaign of rat proofing was carried on in that city during the time and the prevention of human cases is believed to have been due to the activities of the health authorities in combating rodent plague.

As is well known the pneumonic form of plague may, and sometimes does, spread with great rapidity among people who live under overcrowded and other insanitary conditions; that is, where there is close personal contact. Under favorable conditions pneumonic plague spreads along the lines of travel by human beings, by rail or by any other mode of travel, but this is not generally true of the bubonic type, which goes where the rat goes and reaches human beings from the rat.

Even epidemics of the pneumonic form of plague are of animal origin in so far as we can tell. The small outbreak in Oakland, Calif., five years ago started in the following way: A hunter of ground squirrels in shooting these animals evidently obtained one which was sick of plague. It is probable that a flea from this animal bit him, most likely on the arm, and he developed the bubonic type

of the disease. Before he died, however, he developed a secondary plague pneumonia. During his illness he infected others either through coughing or sneezing in close proximity or they may have gotten a very small, an invisible, quantity of secretion from the lungs of the patient on their fingers and from the fingers into the mouth or nose. After the pneumonic form developed from this first case it was passed on from one person to another until 14 people died before the epidemic was checked. Two of those who died in Oakland at that time were doctors and two were nurses.

What is the future of plague? This is hard to predict. More than a quarter of a million cases of human plague were reported from all countries last year. With the facility with which rats carry the disease from one country to another on board ship it seems likely that practically all seaports may sooner or later have to be regarded as actually or potentially infected with plague.

A reference to the statistical tables of the Public Health Reports will show that many times during recent years plague infection, either human or rodent, has been reported on vessels in almost every part of the globe. Only recently two plague-infected vessels arrived at New Orleans, La. One of them had been engaged in trade between ports in Spain and the east coast of South America. The other was from Calcutta via Colombo, Port Said, Algiers, London, and Liverpool. This latter vessel had been fumigated for the destruction of rats at Calcutta and the former at Barcelona, Spain, but evidently without ridding them of the infection, or else they were reinfected subsequent to fumigation.

Once plague infection is present in a given city or community the fight against the disease resolves itself into a fight against the rat or other rodent concerned in its spread. In pneumonic outbreaks the human cases, of course, must be promptly separated from the noninfected portion of the population.

Rats are hunted and trapped and examined for the infection. This is chiefly for the purpose of determining where plague exists. The disease is found almost invariably where the rats are thickest. Immediately steps are taken to remedy the conditions which harbor these pests. Old buildings are demolished, wooden basements are concreted; hollow double walls, floors and ceilings often must be replaced by single walls. Low-built frame houses must be elevated from one and a half feet to two feet above the ground in order that rats may not burrow and multiply beneath them.

Already a number of cities in the United States are constructing all new buildings in such manner as not to afford shelter for rats. Continuous campaigns are waged for the removal of badly constructed buildings, bad rat harbors, of whatever nature.

The ratproofing of new structures is relatively inexpensive, but the cost of ratproofing old buildings is very considerable.

There is only one way to eliminate the rat. It must be *built out of existence.* All other measures produce only very temporary results because of the great fecundity of these animals. This will be readily understood when it is recalled that a single pair of rats under favorable conditions will produce from four hundred to six hundred rats in from fifteen to eighteen months time.

In recent years some improvement has been made in the construction of ships, with a view to eliminating the rat, but much yet remains to be done along this line. A few oil tank vessels have been built so as to practically exclude the rat, but the average freight and passenger steamer may still be said to be virtually a floating hotel for rats.

A Study of the Pellagra-Preventive Action of Dried Beans, Casein, Dried Milk, and Brewers' Yeast, with a Consideration of the Essential Preventive Factors Involved[1]

By JOSEPH GOLDBERGER and W. F. TANNER, Surgeons, United States Public Health Service.

The results of the general study of the prevention of pellagra begun in the early fall of 1914, though clearly demonstrating the preventability of the disease by means of an appropriate diet (1), did not show what foods or food factors were the essential ones. The modified diet employed in that study, while satisfactorily serving its particular purpose, was relatively expensive and, it was suspected, in excess of minimal requirements. These considerations, it was felt, would stand in the way of its ready adoption by households and institutions of restricted incomes. It was extremely desirable, therefore, to attempt to devise a diet that was adequate to prevent pellagra and at the same time inexpensive. For this further investigation was of course necessary. Accordingly, as the clinical opportunities at the Georgia State Sanitarium seemed very favorable and as the trustees and officers were keenly interested in the problem and were ready and willing to cooperate, new studies were started at that institution on January 1, 1918, and have been carried on ever since. Some of the results, more particularly such as seemed to have a significant bearing on the essential dietary factors concerned in the prevention and causation of pellagra, have already been published (2) (3). In the following we record some additional results bearing on this fundamental question together with the results of the study primarily designed to afford a solution of the practical question which appealed to us at the outset.

[1] From field studies in nutrition.

DRIED BEANS

Soon after beginning the field study of pellagra, one of us (J. G.) encountered evidence strongly suggestive of the value of beans and peas in the prevention of the disease. Influenced by this, the legumes were recommended in the treatment and prevention of the disease and were included in generous quantities in the diets used in the test of the preventability of pellagra at the orphanages and at the Georgia State Sanitarium (1). The very favorable outcome of this test tended, of course, to support the earlier indications of the value of the legumes and thus suggested that a study of individual foods might well begin with one of this class.

Soy beans.—The unusually high food value, cheapness and ready availability of the soy bean led us to begin our study with this bean, which was furnished as an addition to the general diet of the inmates of the section of the Georgia State Sanitarium for colored women. The study began January 1, 1918.

The quantity of soy beans supplied averaged fully 2½ ounces per head per day during the first month, and this was increased on February 4, and thereafter maintained at a daily average of fully 3 ounces per person.

During the first month of the study all of the beans were boiled (in a steam-jacketed kettle). Thereafter, in order to favor as large a consumption as possible, the proportion of the beans so prepared was from time to time reduced, a correspondingly increased proportion, after being ground into a coarse meal, was incorporated in the corn bread and in the boiled grits of the diet. During February (February 4 to March 8) the boiled beans constituted 80 per cent of the total served. On March 8 this proportion was reduced to 75 per cent and so maintained until June 4. During the period June 4 to July 4 the proportion was held at approximately 60 per cent and after July 4 at 50 per cent.

Despite this supplement several cases of pellagra developed among the inmates receiving it. An abstract of illustrative cases in individuals who were known to have consumed their full daily ration of soy beans follows:

Case 1.—A colored woman, 61 years old, weighing 42.6 kilos, began taking the supplement of soy beans January 1, 1918, at which time she was without symptoms of pellagra. Ate all her soy-bean ration; she nevertheless developed pellagra June 19, 1918.[2]

Case 2.—A colored woman, 37 years old, weighing 50 kilos, began taking the supplement of soy beans January 1, 1918, at which time

[2] Unless otherwise indicated, the date of onset in the cases represents the date of the first appearance of the distinctive dermatitis.

she was without symptoms of pellagra. Regularly ate all her soy-bean ration, but, nevertheless, developed pellagra June 25, 1918.

Case 3.—A colored woman, 20 years old, weighing 48.4 kilos, began taking soy beans January 1, 1918, at which time she was without symptoms of pellagra. She regularly ate all her ration of soy beans, but developed pellagra October 14, 1918.

Case 4.—A colored woman, 25 years old, weighing 59.8 kilos, began taking soy beans January 1, 1918, at which time she was without symptoms of pellagra. She regularly ate slightly more than the average allowance of the beans; nevertheless she developed pellagra September 18, 1918.

Case 5.—A colored woman, 43 years old, weighing 49 kilos, began taking the soy-bean supplement January 1, 1918, at which time she was without symptoms of pellagra. Regularly ate at least the average allowance of soy beans, but she nevertheless developed pellagra September 18, 1918.

Case 6.—A colored woman, 25 years old, weighing 42.8 kilos, began taking the soy beans January 1, 1918, at which time she presented some slight symptoms of a receding attack of pellagra, which were no longer perceptible two days later. She regularly ate all her allowance of the beans, but developed a recurrent attack on October 22, 1918.

Case 7.—A colored woman, 15 years old, weighing 43 kilos, began taking the soy beans on admission, January 10, 1918, at which time she had some symptoms of active pellagra. These symptoms cleared up between January 22 and 29. No further symptoms were noted until September 4, which date marked the onset of a recurrence. Throughout she had eaten her full allowance of the beans.

Case 8.—A colored woman, 56 years old, weighing 58 kilos, began taking the soy beans on admission, February 23, 1918, at which time she presented no symptoms of pellagra. She ate at least all of her allowance of the soy beans, but nevertheless developed the beginning of an attack of pellagra on September 17, 1918.

As has already been stated, the soy beans issued as an addition to the institution diet averaged fully 2½ ounces per head per day between January 1 and February 3. On February 4 the quantity furnished was increased and thereafter, to the end of the study, maintained at an average of fully 3 ounces per patient per day. In estimating the amount actually consumed some deduction should be made for unavoidable loss in handling in the kitchen and in distribution in the dining rooms; a small allowance should also be made for table waste, even in instances such as we have cited in which the individuals left "clean plates," consuming all of their portions. We believe that a deduction of one-half ounce probably more than covers all possible losses and that it is conservative to estimate that

in each of the cases cited the individual ingested an average of fully 2½ ounces of soy beans daily during a period varying between four and one-half and eight and one-half months before developing the attack of pellagra.

It thus appears that the daily consumption of fully 2½ ounces of soy beans as here described was inadequate to prevent the development of the disease.

Discussion.—The failure of the soy bean supplemented diet would seem to indicate that this legume in spite of its relatively high food value lacked, or, in the quantities and form in which it was used, supplied too little of the essential preventive factor or factors to serve as an adequate pellagra-preventive supplement. While it is conceivable that a larger quantity might have been effective, this consideration is not of much importance practically, since for the average individual the practicable day-to-day limit of consumption had, we believe, about been reached in the test. In this connection, however, some consideration must be given to, and allowance, perhaps, made for, the degree of digestibility of the food in question. This is particularly pertinent in the present connection, since we have found that as served after boiling, this bean still retained a rather firm consistency, requiring relatively considerable pressure to mash it, and thus suggesting that unless well masticated digestion might be interfered with, with consequent serious loss of nutrients. Holmes (4), discussing the results of a study of the digestibility of this bean, makes a very similar observation, remarking that "the digestibility of the protein supplied by steam cooked soy beans is apparently less than that of soy-bean flour, owing to the fact that the thin unbroken skin that surrounds the cooked soy bean is impervious to the action of the digestive juices." Now it is well known that among the insane the "good eaters" are very frequently those who bolt their food with little or no mastication. The possibility is therefore present that in our patients a more than ordinarily large proportion of the boiled portion of the bean ration was subjected to very imperfect mastication before exposure to the digestive juices. How much, if at all, this actually contributed to the result under consideration we are unable to state, but we are inclined to assume that a deduction of one-third from the quantity of the soy beans ingested in the boiled form would perhaps quite fully cover the possible loss from this cause. Now since several of the above-cited cases of pellagra developed after periods of upward of two or three months, during which the boiled beans formed only about one-half of the daily bean ration, it would appear on the basis of this assumption that the disease developed in some instances in spite of a daily ingestion of the equivalent of approximately 2 ounces of soy beans of average (normal) digestibility (Table I). But even this reduced

quantity would seem to be a fairly liberal day-to-day intake of this legume, so that its failure as a preventive food, while not conclusive as to its absolute deficiency in preventive power, is, nevertheless, rather strongly suggestive of at least a practical inadequacy in this respect.

Soy-bean purée.—With the idea in mind that the failure of the soy-bean supplement might have been due to an inadequate quantity and a relatively (unusually) low digestibility of the beans, a further test of their preventive power was undertaken, beginning January 25, 1919. In this test the soy bean after being boiled was rubbed up into a purée. The composition of the daily ration of this purée during the period January 25 to February 8, 1919, was as follows: Dry soy beans, 228 grams; sucrose, 228 grams; pork fat, 28 grams; table salt, 4 grams; fresh lemon juice, 4 grams; and water enough to make approximately 2 liters. In order to insure an abundance of vitamin A, the daily ration of purée was modified so that after February 9 it had the following composition: Dry soy beans, 114 grams; creamery butter, 56 grams; sucrose, 228 grams; cornstarch, 85 grams; table salt, 4 grams, fresh lemon juice, 4 grams; and water enough to make 2 liters. The purée was offered to a small group of pellagrins. It was very well taken during the first six or eight weeks, after which there was a more or less rapidly progressive decline in appetite with some nausea and vomiting, necessitating a change to another type of diet. In 3 of about 12 pellagrins in whom this treatment was tried, there was noted, either just before or very shortly after the change to another diet was made, the development of symptoms either very suggestive of, or quite definitely those of, a recurrence of pellagra or of *pellagra sine pellagra.*

Thus the daily intake of at least 114 grams (4 ounces) of soy beans in the form of a purée during a period of not less than seven to eight weeks appeared insufficient to prevent the recurrence of pellagra and tended to confirm the indications of inadequacy afforded by the result of the experience with the soy-bean supplemented diet of 1918.

Cowpeas.—The cowpea is one of the most highly esteemed legumes among the people of our Southern States. While not possessed of quite so high a food value as the soy bean, it has an important practical advantage over the latter in that it requires much less cooking to prepare it for the table. These considerations, coupled with the fact that our previous field observations and experience were largely concerned with this legume, made it seem desirable to study it more closely. Using the variety known as the California blackeye pea, a test was begun in a small group of pellagrins (nine in all) on February 4, 1919, and carried on concurrently with the study of the value of the soy bean.

To insure as high a degree of digestibility as possible, the cowpeas were prepared as a purée. The composition of the daily ration was as follows: Dry cowpeas (California blackeye) 200 grams; creamery butter, 85 grams; sucrose, 170 grams; cornstarch, 28 grams; table salt, 4 grams; fresh lemon juice, 4 grams; and water enough to make approximately 2 liters.

This soup was quite well taken during at least the first three or four months. Then, as in the case of the soy-bean purée, the appetite of the patients more or less rapidly fell off, with the development of some vomiting, eventually leading to a change of diet in all cases. In two of the pellagrins of this group, mild but definite symptoms of a recurrence of pellagra developed, in one at the end of about four, and in the other at the end of about five, months of the cowpea soup feeding.

The indication of a failure to protect in these two patients suggests that the dry cowpea has little, if any, pellagra-preventive value,[3] and thus fails to support certain of the seemingly favorable indications afforded by the earlier clinical and epidemiological observations.

Summary and conclusion.—The pellagra-preventive value of the dry soy-bean as an addition to the general diet of the colored female inmates of the Georgia State Sanitarium was studied during 1918. The daily issue was 3 ounces but, allowing for various possible losses, it is estimated that those who ate well ingested the equivalent of approximately 2 ounces (56 grams) of soy-beans of normal digestibility. In spite of this, however, several cases of pellagra developed.

Concurrently with the soy-bean soup study a trial was made of the preventive value of a daily ration of approximately 200 grams of dry California blackeye peas, also in the form of a soup, with results indicating that this, too, was inadequate fully to prevent recurrence of pellagra.

The dry soy-bean and the California blackeye pea would appear to possess little, if any, pellagra-preventive value.

CASEIN

The disappointing indications afforded by the study of the soy-bean and the cowpea led us to turn to a study of milk, another one of the foods that had been included in the diet used in the successful test of pellagra prevention (1). Some of the results of this and of related studies have already been published (2) (3). These showed that while milk (in the form of buttermilk) was capable of preventing pellagra, certain of the components of milk, namely, fresh butter (that tested was, like the buttermilk, produced in the vicinity of the

[3] We have not yet studied the preventive value of the fresh green or string bean.

Georgia State Sanitarium) and the inorganic minerals (in the form of an artificial mineral mixture resembling in composition that of the ash of milk) appeared to be devoid of this action. Since certain other evidence incidentally adduced appeared to indicate that none of the known vitamins were essential factors in the prevention of the disease, there remained for consideration in attempting to explain the pellagra-preventive action of milk only (*a*) the quality of its protein, (*b*) some as yet unrecognized or unappreciated dietary factor, or (*c*) a combination of these. Since, as between the protein and an as yet unrecognized factor, the probabilities seemed to us to favor the former, it appeared reasonable to expect that the prevention of pellagra might be accomplished by improving the quality of the protein of the diet with a sufficient supplement of a good protein. For this purpose we chose casein and (hopeful of accomplishing our aim) began a study of its therapeutic and preventive value late in the summer of 1922. The study was carried on until late in February, 1924.

The casein principally used was a grain curd casein specially prepared for us by the Grove City Creamery, Grove City, Pa.[4] Its preparation was under the supervision of Mr. A. C. Weimar, dairy manufacturing specialist of the Bureau of Animal Industry, United States Department of Agriculture, who advised us that the mode of preparation was essentially as follows: The casein was precipitated from sweet skim milk with hydrochloric acid of the pH of casein. After drawing off the whey, the curd was pressed and immediately ground fine in the moist state. Then for five days this casein was washed with tap water acidulated with acetic acid to the pH of casein, the acidulated water being changed daily. At the end of this period the casein was washed in distilled water to remove the acid and then dried and stored in sealed lacquered tin containers.[5] Desiring as highly purified a preparation (so far as vitamins were concerned) as practicable, a considerable part of this casein was subjected to further treatment before being used in our study. This additional treatment (a modification of a method of purification kindly recommended by Prof. E. V. McCollum) consisted first of a washing in three or four changes of scalding hot tap water on the first day, then of a leaching in acidulated water (acetic acid 0.2 per cent in tap water) for six days with a daily change of the acidulated water. The acid was then removed by washing in three or four quick changes

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[4] Our thanks are due to Dr. L. A. Rogers, chief, Dairy Research Laboratories, Bureau of Dairying, Department of Agriculture, for his helpful cooperation in having this casein prepared for us.

[5] Young rats fed a diet which derived all its vitamin A from 18 per cent of this casein developed xerophthalmia after about eight weeks, showing a deficiency of vitamin A. When the same casein formed the sole source of vitamin B, the growth of young rats promptly ceased, followed at once by a rapid decline in weight, showing absence of factor B.

of tap water, after which the water was drained off and the casein dried in a current of air at about 80° C.

During two short periods, the first of 10 days at the very outset of the study and the second of 9 days near its close, a commercial vitamin A free casein (Harris laboratories, Tuckahoe, N. Y.) was used.

In all, some 34 pellagrins were offered the casein treatment. Of these six took it for periods (seven days to three and one-half months) too brief to serve as a sound basis for judging its value.[6] The remaining 28 took it for the more significant periods of from 5 to 13½ months.

The study included 9 pellagrins who, when treatment was begun, presented active symptoms of the disease, and 19 who were free of evidence of active pellagra when they came under observation. In the former, the casein supplement was nearly always begun at 85 or 90 grams a day and so maintained for at least 8 to 10 weeks and then reduced to 46 grams (after June 21 to 69 grams), the allowance made those pellagrins who when taken under treatment no longer presented any symptoms of the active disease.

In deciding on the allowance of casein to be made in the latter class of cases, that is, for the purpose of purely preventive treatment, we were guided by our experience with buttermilk, 1,200 grams of which (approximately 36 grams protein) was at that time proving itself adequate for preventive purposes. We began with approximately 46 grams (approximately 40 grams protein) per patient per day, in order to supply somewhat more protein than that furnished by the buttermilk, thus allowing, in some measure, for the inferiority of the casein protein as compared with the mixed proteins of milk. After some months—as will presently be explained—a suspicion arising that 46 grams of casein might not be quite sufficient in all cases, the supplement of casein was increased by 50 per cent to 69 grams a day. Toward the close of the study this was further increased to 85 grams.

Condensed clinical notes of 10 representative cases that received casein treatment follow:

Case 9.—A colored woman 34 years old, admitted to the Georgia State Sanitarium August 30, 1922, with dermal and mental manifestations of pellagra. Came under our observation September 2, 1922, presenting marked dry dermal lesions having the distinctive characters of the pellagrous dermatitis involving the back of the hands, fingers, lower third of the forearms, elbows, and the back of the neck and feet. There was present also some seborrhœa about the nose and some incrustation about the angles of the mouth. The bowels

[6] The normal tendency for the clinical manifestations of pellagra to fluctuate in intensity, at times within the widest limits, may mislead the observer in appraising the effect (particularly the seemingly favorable effect) of treatment if the period of observation is brief.

were constipated. She was confused and disoriented. With the idea in mind that gelatin might improve the protein mixture of the diet and thus prove beneficial, she was given a daily supplement of 85 grams of this protein. Stirred into her food, she took it well for some 10 or 11 days. Having lost somewhat in weight and strength during this period and the bowels having become somewhat overactive, the gelatin was replaced by an equal amount of casein on September 14. (From September 14 to September 24 the casein was the Harris "vitamin A free" casein; after September 24 it was our purified grain curd casein.) The daily allowance of 85 grams was maintained until January 3, 1923, when it was reduced to 46 grams, at which it was maintained until June 22, when it was increased to 69 grams (Table II).

A few days after the change from gelatin to casein her appetite returned and she ate well. Weighing 38.5 kilos on September 18, 1922, her weight rose, attaining 54.5 kilos on June 4 and 56.5 kilos on October 29, 1923. The dermatitis and seborrhœa slowly improved and she gained in strength so that by November 6, 1922, she felt strong enough to be up and about. By December 4 all dermal lesions had cleared up, leaving but a residual pigmentation; mentally, however, she was still somewhat confused.

Early in January, 1923, and again early in June she suffered from some menorrhagia. In June also there was noted some tachycardia. From June 24 to August 8 she received a daily dose of 15 grams of Seidell's "activated solid" with the idea that it might have a beneficial effect on the tachycardia. No notable effect on the pulse rate having been accomplished, it was discontinued on the latter date. Except for a tendency to an accelerated pulse rate she continued in good condition until September 11, 1923, at which time there was noted a slight fissuring at the angles of the mouth with dryness and scaling of the vermilion border of the lower lip. At this time, too, her bowels were constipated.

By October 4 the vermilion border of the upper lip had also become dry and scaly. This condition of the lips persisted without significant change and on October 25 there was noted a slight roughening of a patch of skin of the upper lip just under the nasal septum. At this time she was again suffering from a somewhat prolonged though scanty menstrual flow. Meantime her mental condition had improved so that she seemed about at her normal.

On November 15, 1923, she was noted to be in good general condition except for the dryness and scaling of the lips with slight fissuring of the lower one, and as she desired to go home the casein supplemented diet was discontinued. Without further change in condition she left the institution on December 20, 1923.

Summary.—A case of dermal and mental pellagra in which treatment with casein was accompanied by gain in weight and strength and a clearing up of the marked dermal and mild mental manifestations without definite evidence of relapse of the dermatitis or mental disturbance during a period of approximately 14 months. The development during the latter part of this period of dryness and scaliness of the vermilion border of the lips with slight fissuring of the lower lip and at the angles of the mouth and of a tendency to constipation and to tachycardia, is regarded, however, as suggestive of an incomplete recovery or of a relapse of a larval *pellagra sine pellagra.*

Case 10.—A colored woman, 24 years old, admitted to the Georgia State Sanitarium in 1919. Developed an attack of *pellagra sine pellagra* (a well-marked stomatitis with slight looseness of the bowels and seborrhœa of the chin) in October, 1922.

Treatment with a supplement of 85 grams of our purified grain curd casein was begun October 28, 1922. This daily allowance of casein was continued until January 3, 1923, when it was reduced to 46 grams. On June 22, 1923, it was increased to 69 grams and so continued to October 22, when treatment with casein was discontinued.

For about a week after beginning the casein the appetite was poor. It then improved and she ate well until after the middle of September, 1923. Her strength improved and she gained in weight. (During the period January 1 to July 16, 1923, her weight rose from 58.5 to 67 kilos.)

By December 28, 1922, evidence of the attack had almost completely cleared up, after which she continued in good condition until about September 11, 1923. At this time there were noted erosions of the skin at the angles of the mouth with a moist soggy appearance of the vermilion border of the lower lip and a diminution of food taking. Gradually the condition of the lower lip changed so that by October 4 it had become dry and crusty and a little reddened with fissuring at the angles. In the course of the succeeding two weeks scattered irregular, ill-defined patches of dark somewhat dry sebum developed over the forehead, nose, cheeks, and malar prominences. This washed off readily with soap and water, leaving a smooth skin, but within two or three days the condition re-formed. By October 25 there was present a definite though mild stomatitis, increased salivary flow, and a tendency to nausea. The food taking having gradually declined, a change in diet was made on October 22, 1923.

Summary.—A case of *pellagra sine pellagra* in which the inauguration of the casein supplemented diet was followed by physical improvement and a clearing up of the evidence of *pellagra sine pellagra.*

At the end of a period of about 11 months of the casein treatment symptoms of a recurrence began to develop and in the course of a month had progressed so that a diagnosis of *pellagra sine pellagra* was made.

Case 11.—A colored woman, 18 years old, admitted to Georgia State Sanitarium November 25, 1921. On October 2, 1922, she was found to have a stomatitis suspected of being pellagrous. She came under our observation on October 5, presenting a tongue with beefy red tip and margins, increase in saliva, reddened mucosa of lower lip, and constipation. A diagnosis of *pellagra sine pellagra* was made. On the same day treatment was begun with a liquid diet which included approximately 600 grams of milk, 15 grams of cod-liver oil, and 100 grams of butter. She took this well, and her symptoms subsided, so that at the end of three weeks there was nothing notable except some overactivity of the bowels. In the course of another two weeks, however, there was a relapse of mouth symptoms—a mild stomatitis. On November 11 the liquid diet was abandoned and a solid diet, including approximately 140 grams of fresh butter, was begun. She ate this well, her appetite continuing excellent. There was, however, no consistent improvement in her condition, there being alternations of improvement and relapse in the stomatitis as also of constipation and overactivity of the bowels. Although, as has been mentioned, she ate well, there was no gain in weight nor in strength.

On December 7, 1922, her diet was changed to the casein diet which case 9 and case 10 were at this time taking. During the first two weeks following this change her appetite was poor and her food consumption was considerably reduced, but she took practically her entire daily allowance of 85 grams of casein. After this there was improvement in food taking and gradual improvement in her condition. On January 3, 1923, the casein supplement was reduced to 46 grams, and by the end of that month she was practically free of any evidence of pellagra. By April 1 she had gained approximately 6 kilos in weight.

She continued in good physical condition until near the end of June, when her appetite showed some falling off, her temperature was found to have risen, and, there being indications that she might be suffering from an acute miliary tuberculosis, she was transferred to another section of the institution on July 1, 1923, and passed from observation.

Summary.—A case of *pellagra sine pellagra.* During the period of two months (October 5 to December 6) immediately after coming under observation this patient continued in a state of mild *pellagra sine pellagra,* brief periods of improvement in symptoms alternating

with periods of relapse, indicating inadequacy of the treatment with the high butter diets during this period.

On the casein supplemented diet she gained in weight and strength, her symptoms cleared up without any evidence of a relapse at any time to the close of the period of observation, which came after upward of seven and one-half months of the casein.

Case 12.—A colored woman, 42 years old, who was a pellagrin with a record of active attacks in 1913, 1915, and 1919. Taken under observation January 3, 1923, for the purpose of preventive treatment. At this time she was without recognizable evidence of active pellagra, so she began with a daily supplement of 46 grams of our purified grain curd casein. She ate well and gained slowly in weight (about 3 kilos) during the first five or six months.

On June 22, 1923, or, roughly, about five and one-half months after beginning the casein, a dermal lesion about 2 centimeters in diameter was found to be present on the back of the left hand over the proximal end of the second metacarpal. The lesion was slightly pigmented, dry, and just beginning to desquamate. In the course of the succeeding three or four days the lesion desquamated centrifugally, leaving a clean central area slightly over 1 centimeter in diameter encircled by a desquamating fringe. In appearance it resembled a pellagrous lesion. There was no other discoverable lesion. She was in good physical condition, was eating well, and presented no other symptoms. Suspecting, however, that this lesion might be pellagrous, and, if so, that the casein supplement might not be fully adequate, the daily allowance for this patient and all other patients receiving casein was at once increased to 69 grams.

Within 10 days after the discovery of the lesion on the left hand (and after the increase in the casein) practically all evidence of it had cleared up. At about the end of this period—that is, about July 2, 1923—the presence of an unusual increase or accumulation of a caseous material in the folds at the angles of the nose was observed. Removal of this caseous material exposed a slightly reddened linear surface. In two or three days, however, this lesion, which was new to us, had cleared up. She continued in good condition, eating well, and nothing further of interest was again noted until about the beginning of October, when a mild seborrhœa made its appearance over the lower part of the nose and alae nasi, and then gradually the skin of these parts became slightly rough and scaly. This condition persisted and about November 1 a small area (about 1 centimeter in diameter) of skin just below the left angle of the mouth became somewhat eroded in appearance. In the course of the succeeding two weeks—that is, by November 15—a similar lesion developed below the right angle of the mouth. At this time, too, there was noted the reappearance of the

pasty, caseous accumulation in the fold or groove at the angles of the nose and in that beneath the nasal septum.

In the course of the next two or three weeks all these lesions cleared up completely, so that by December 3, 1923, there was nothing notable in her condition.

About January 7, 1924, however, it was noted that the vermilion border of her lower lip was dry, glazed (somewhat parchment-like) in appearance. The allowance of casein was now increased to 85 grams.

Toward the end of January the patient began to complain of pain in her feet, particularly at night, and it was found that the patella reflex was much diminished. During February the pain seemed gradually to subside, but some stiffness and uncertainty in gait developed. The vermilion border of the upper lip became glazed and some fissuring at the angles of the mouth appeared.

On February 27 the treatment of the patient was radically modified, so that this marks the end of the casein preventive treatment, which had thus lasted upward of 13 months.

Summary.—A pellagrin without active manifestations when treatment was begun. At the end of about five months of the preventive casein treatment (46 grams a day) this patient developed a very suspicious but slight and evanescent dermatitis on one hand which did not reappear during a subsequent further period of observation of about eight months on an increased casein allowance. During this second period (of increased casein) other manifestations in part familiar (seborrhœa and roughening of skin of nose, erosions of skin at, and fissuring of, oral commissures, glazing of vermilion border of lips, pain in the feet suggesting *pellagra sine pellagra*) and in part (pasty accumulation overlying a reddened linear surface in the fold at angle of nose and beneath nasal septum) new to us made their appearance.

Case 13.—A colored woman 39 years old; a pellagrin with a record of an attack of the disease in 1920 and in 1921. She was taken under observation for preventive treatment with casein on January 3, 1923, at which time she was without evidence of active pellagra so, as in case 12, she began with a daily supplement of 46 grams of our purified grain curd casein. Because of suspicious development in case 12 the dose of casein in this, as in all other patients receiving the treatment, was increased to 69 grams on June 22.

Her appetite was good and she ate the casein supplemented diet (Table II) well until about the middle of September, when there began a falling off in food consumption. Up to this time, that is, during a period of about eight months, she had gained 10 kilos in weight. About the time (or a little before) her appetite began to fail, the vermilion border of the lower lip became dry and scaly and in the

course of the following week the mucosa of the lower lip became reddened; some fissuring at the angles of the mouth developed and there seemed to be some increase in salivary secretion.

During the last week of September a definite though mild stomatitis developed and a slight seborrhœa at the angles of the nose made its appearance.

Early in October a slight conjunctivitis developed with a secretion that tended to dry and accumulate on the margin of the lids at the inner canthus. The stomatitis persisting with a more marked diminution in appetite and a tendency to flurries of looseness of the bowels, the casein supplemented diet was discontinued on October 7 and a liquid nourishment offered instead.

Summary.—A pellagrin without active symptoms when preventive treatment was begun. During a period of seven to eight months following the inauguration of the preventive casein supplemented diet this patient gained in weight and appeared in good physical condition. At about the end of this period there began a falling off in food taking, with the gradual development of a stomatitis, a tendency to looseness of the bowels and a mild conjunctivitis, constituting a *pellagra sine pellagra.*

Case 14.—A colored woman 21 years old; admitted to the sanitarium April 29, 1922, with pellagra. Taken under observation for preventive treatment January 23, 1923, at which time she no longer presented evidence of active pellagra. The casein supplement offered daily was 46 grams until June 22, when, by reason of developments noted in case 12, an increase to 69 grams was made. At the outset and until about the middle of July, that is, during about six months, her appetite was good and she gained about 5 kilos in weight.

About the middle of July food taking began to lessen, and about a month later a mild conjunctivitis affecting the right eye made its appearance. Under boric acid solution irrigation the condition of the eye cleared up in the course of about a week. About a week later, that is, about August 30, erosions of the skin at the angles of the mouth appeared and in the course of the succeeding three or four days the symptoms (reddening of the mucosa of the lips, cheeks, and soft palate) of a mild but definite stomatitis developed. In the course of another three or four days the vermilion border of the lips became dry and began to exfoliate. At the same time there appeared along about the inner third of the cutaneous aspect of the margin of the eyelids what seemed to be a dark adherent film of ocular secretion. The bowels were constipated. Meanwhile the appetite had become so much diminished that a change to another type of diet was deemed desirable and was made on September 14, 1923, or toward the close of a period of approximately eight months.

Summary.—A pellagrin without active symptoms when preventive treatment was started. After about six months of the casein preventive treatment, the appetite began to diminish; then after about six weeks more a mild but definite stomatitis developed (accompanied by a peculiar, unfamiliar condition of the eyes) suggesting *pellagra sine pellagra.*

Case 15.—A colored woman 35 years old with history of pellagra in 1915, 1920 and 1921. Taken under observation for preventive treatment January 3, 1923, at which time she was free from recognizable evidence of active pellagra. The casein supplement was 46 grams daily until June 22, when it was increased to 69 grams. The diet so supplemented was well taken until early in May, when a slight diminution in food taking developed. At about this time or shortly thereafter the bowels became markedly constipated. She maintained her initial weight and physical condition until about August 7, when a further reduction in appetite developed, slight erosions appeared at the angles of the lips, the lower lip appeared somewhat reddened, and the tip and upper surface of the tongue became slightly eroded. In the course of another week the condition of the lips and tongue returned virtually to normal, but the erosions at the angles of the mouth reappeared a few days later. About September 11 it was noted that slight fissuring had developed at the oral commissures and that there was present in the fold at the angles of the nose and below the septum a somewhat linear lesion consisting of a pasty, caseous accumulation over a reddened surface. The lesion at the oral commissures persisted but fluctuated in degree at irregular intervals but the linear lesion at the angles of the nose and below the septum faded out before the end of September, only to reappear early in October. By November 12 the symptoms of a mild stomatitis developed and, as the appetite had been capricious since May and food taking had since early in August become increasingly unsatisfactory, a change to another type of diet was made on November 18, or after a period of about ten months of the casein preventive treatment.

Summary.—A pellagrin without evidence of active pellagra when preventive treatment was started. The appetite declined and became capricious after about four months of the casein treatment. After a further period of about three or four months, erosions and fissures developed at the oral commissures and a peculiar, unfamiliar dermal lesion, linear in form, appeared in the fold at the angles of the nose and below the nasal septum. Finally at the end of about 10 months there developed a definite stomatitis suggesting a *pellagra sine pellagra.*

Case 16.—A colored woman 27 years old with a record of an attack of pellagra in 1921. Was taken under observation for preventive treatment January 3, 1923, beginning with a casein supplement of 46 grams. At this time she was without evidence of active pellagra.

Her appetite was good and remained good throughout the year, that is, until January, 1924, when food taking began gradually to decline. There was a gradual and steady though slight gain in weight during the year, so that by the middle of November (1923) she had gained approximately 6½ kilos. With the falling off in appetite beginning with January, 1924, there was a decline in weight.

There was nothing notable in her condition until about the beginning of October, when the lower lip was observed to be somewhat reddened and the oral commissures slightly fissured. By October 22 there had developed a mild but definite stomatitis. The stomatitis faded out in the course of three or four days, but the reddening of the lower lip and fissuring of the angle of the mouth persisted. About November 1 it was noted that a crusty accumulation of secretion had formed about the inner canthus of each eye. About the middle of November the signs of a stomatitis reappeared. During the last week of the month all signs previously noted, except the reddening of the lower lip, cleared up. For about three weeks there was again little notable in her condition. Then, during the last week of December, the vermilion border of the lower lip became scabby and fissured.

About Janaury 8, 1924, the casein supplement was increased to 85 grams, but the slightly reddened mucosa and the scabby and fissured condition of the vermilion border of the lower lip persisted, though with some fluctuations, to the end of the period of observation, February 27, 1924, when a radical modification in her diet was made.

Summary.—A pellagrin without active symptoms when preventive treatment was begun. Signs of a mild but definite stomatitis (*pellagra sine pellagra*) appeared after about nine months.

Case 17.—A colored woman 30 years old, admitted to the sanitarium on April 3, 1923, at which time she presented an extensive pellagrous dermatitis, seborrhœa of the face, slightly reddened tongue, normal bowels, and mental confusion. At this time she was offered the infirmary diet with supplementary milk. The appetite was poor at first, but slowly improved.

On April 23 she came under our observation and treatment with a casein supplement of 90 grams was begun. She ate this well. On June 15 the casein allowance was reduced to 46 grams, but because of the suspicious developments mentioned in case 12 the casein allowance was increased to 69 grams on June 22. By the end of May 11 evidence of active pellagra had cleared up but there was still present a slight mental retardation. The food taking continued excellent and her weight rose gradually. Weighing 48 kilos on April 23, when the casein treatment was begun, she attained a weight of 54 kilos on July 9 and maintained substantially this weight to the end of the period of treatment.

About September 27, that is, at the end of a period of five months of casein, she developed a somewhat comma shaped patch of erythema, about 2 to 3 centimeters in length, extending downward and outward from the inner palebral angle of each eye. At this time she was in fair touch with surroundings but still, apparently, somewhat nervous. Within three or four days after its appearance the erythema gave place to pigmentation. At this point (September 30, 1923) she was furloughed and left the institution. She was seen by one of us about a week later, at which time the pigmented patch had faded, leaving a hardly perceptible trace, nor did she present any other recognizable indications of a recurrence of the disease.

Summary.—A case of pellagra with an extensive dry dermatitis and mild mental symptoms when patient came under observation. Signs cleared up and patient gained in weight and strength on the casein supplemented diet but at the close of a period of treatment of about five months very slight dermal lesions, suspected to be pellagrous, made their appearance but quickly faded out.

Case 18.—A colored woman, 31 years old, taken under observation for treatment with casein June 9, 1923. At this time she presented a pellagrous dermatitis over the lower third of the radial aspect of the forearms and of the back of the left hand, a seborrhœa of the face, and a reddened mucosa of the lower lip with a dry and fissured vermilion border. The bowels were normal. Her appetite was good, and by about the middle of July she had gained about 3 kilos in weight. The evidence of pellagra rapidly cleared up, so that by July 9 she was apparently free of active pellagra. She so continued until early in September when the vermilion border of the lower lip was observed to have become abnormally dry and a pasty caseous accumulation overlying a reddened surface, linear in form, along the fold at the angles of the nose had formed. This persisted thereafter without notable variation. About September 24 a little dried secretion was noted to have gathered on the lids of the left eye at the inner canthus. At about the same time the appetite began to diminish. Early in October it was noted that the angles of the mouth had become fissured and eroded. By October 11 a mild but definite stomatitis was present and dried secretion had gathered on the lids at the inner canthus of the right eye, so that both eyes were now affected. Early in November the stomatitis subsided markedly, but the lips continued dry and had become crusty and a pasty, caseous accumulation on a linear reddened surface formed in the transverse groove just below the nasal septum. The condition of the eyelids remained unchanged, but gradually the evidence of a conjunctivitis became pronounced, so that by November 22 it was quite marked. There was at this time some photophobia, particu-

larly of the right eye, which presented an ulceration apparently about 1 millimeter in diameter in the lower inner quadrant of the cornea. The secretion from the eyes seemingly overflowed and dried on the lower lids along the palpebral border. That portion of the lower lid of the right eye over the tarsal cartilage presented, in addition, a slightly reddened erythematous appearance. Food taking having meanwhile fallen off quite markedly, a change in diet was made at this time. The therapeutic preventive period of treatment extended in this case from June 9 to November 22, 1923, somewhat over five months.

Summary.—A case of dermal pellagra when treatment was started. On the case in the distinctive pellagrous dermatitis and the other signs of pellagra cleared up rapidly. The dermatitis did not relapse during the five months of observation, but at about the end of four months there developed evidence of a mild stomatitis (*pellagra sine pellagra*) and a conjunctivitis later accompanied by a mild ulceration of the cornea.

Results.—Summarizing our experience, it may be stated that following upon the inauguration of the casein supplemented diet the general physical condition (weight and strength) improved in all but one or two patients and the symptoms of active pellagra (including *pellagra sine pellagra*) if such were present at the beginning of treatment, cleared up in all but three or four. In all cases presenting the distinctive dermatitis on beginning treatment this cleared up. In a few instances (illustrated by case 11) the improvement and freedom from symptoms persisted to the end of the period of observation. In all the others in which improvement apparently had taken place, this improvement was followed after varying periods by the relapse or recurrence of unfavorable signs and symtoms. Very commonly, though not invariably, there was some falling off in food taking and generally this was the first unfavorable sign to appear. Accompanying or independently of any diminution in appetite there developed some one or more of the signs or symptoms illustrated by the cases above cited, namely, a dry, glazed, vermilion border of one (usually the lower) or both lips with or without scaling or exfoliation; erosions of the skin at the angles of the mouth with or without fissuring of the commissures; perlèche; reddening of one or both lips, alone or associated with stomatitis; slight seborrhœa about the nose and, in two or three instances, reduction in or loss of the patella reflex and some disturbance (spasticity) in gait accompanied in one by pain in the feet. All of these signs and symptoms have been observed in or associated with pellagra. In addition there appeared in several of the patients a peculiar, to us unfamiliar and heretofore undescribed, lesion (a more or less marked accumulation of a pasty, caseous material on a linear reddening of the skin) in the groove at the

angles of the nose and in the transverse groove below the nasal septum; in some there developed a conjunctivitis with a secretion that tended to accumulate and dry at the inner canthus of the eyes or on the lids along the palpebral margin. The linear lesion at the angles and below the septum of the nose and the conjunctivitis were entirely new in our experience with pellagra. That they were of dietary origin was rather strongly suggested by their very prompt response to a change in diet (dried yeast).

With three exceptions at the most, none of our patients showed any evidence of a relapse or of a recurrence of the distinctive dermatitis. The exceptions included cases 12 and 17 above cited and a case in a patient in whom there developed after about nine months of the casein supplemented diet a dry, scaly condition of the skin across the bridge of the nose subsequently extending slightly to the cheeks. This was quite suggestive of the butterfly lesion of pellagra. In none of these three cases did the suspicious lesion develop sufficiently to permit of its confident recognition as pellagrous. In other words, while nearly all of our patients sooner or later developed some symptoms either suggestive of or definitely those of *pellagra sine pellagra*, with only three possible exceptions none had a relapse or recurrence of the distinctive dermatitis of pellagra. This is all the more striking since ordinarily we would expect fully 40 or 50 per cent of such patients to develop the characteristically marked eruption.

Conclusion.—It would appear, then, that the casein supplement had had a beneficial effect on the general nutrition of our patients and in considerable measure prevented or, at least, notably delayed the development of the distinctive dermatitis. It did not prevent, though it may have delayed, the relapse or recurrence of some of the other symptoms and signs of the disease (*pellagra sine pellagra*).

DRIED MILK

Our very favorable experience with buttermilk (3) during 1922 naturally emphasized the desirability of improving the availability of milk as a measure looking to the eradication of the disease from institutions and localities affected by it. Climatic and economic considerations suggested that this purpose might most satisfactorily be served by dry skim milk. While in the light of our previous experience with milk it seemed entirely permissible to assume that dry skim milk would be effective in pellagra prevention, it nevertheless seemed worth while to demonstrate by trial that such was actually the case. With this in view we began a trial of dry skim milk as a pellagra preventive in July, 1923, and carried on the study until September, 1924.

In order to make the study at least roughly comparable to that of buttermilk, the daily allowance of the milk [7] was fixed at 105 grams in order to supply approximately the same amount of protein (approximately 36 grams) as was supplied by the supplement of 1,200 grams of buttermilk. During the first three months it was stirred into the food, but after that it was found more convenient to dissolve it in water and give this in equal portions at each of the three meals (Table III).

Of some 22 pellagrins taking this milk supplemented diet, one developed mild but definite symptoms of a recurrence including a superficial but distinctively marked dermatitis, one a mild, intermittently relapsing dermatitis and two others some dermal lesions very suggestive, but not certainly those of pellagra. None of the others, 12 of whom were under observation for fully one year, showed any recognizable indications of the disease unless some loss in weight in a few instances is to be so regarded.

It would appear indicated, therefore, that the dry skim milk, in the quantity offered, had some, but not fully adequate, pellagra-preventive action, and since the quantity of dried milk consumed was approximately equal (on the basis of protein content) to that of the buttermilk offered during the study of the latter and found fully adequate for all of a group of 25 patients, we would seem to have here a suggestive indication of a difference in pellagra-preventive power in favor of the fresh buttermilk. In this connection it may be noted that, as compared with casein, the dried milk may, perhaps, have been less efficient in preventing the recurrence or relapse of the distinctive dermatitis but more efficient in preventing the other symptoms and signs of the disease. The difference as relates to the dermatitis was slight, probably too slight and based on too small a number of observations to be significant. As relates to the symptoms other than the dermatitis, the difference was very marked and unmistakable.

The results of this study would seem to warrant the conclusion that dried skim milk may have some pellagra-preventive action.

BREWERS' YEAST.

Certain observations in connection with an experimental study of black tongue in dogs having afforded highly suggestive indications that yeast possessed valuable therapeutic and preventive action in this condition (5), and being impressed with the possibility that this canine disease might be the analogue of pellagra in man (6) it seemed desirable to try yeast in the treatment and prevention of the human disease.

[7] The dry skim milk used was a "Merrel-Soule" commercial product secured from time to time in convenient quantities.

A beginning was made on May 26, 1923, with two patients. The effect of the yeast in these appeared so favorable that gradually more and more patients were taken under treatment, so that by May 10, 1924, 26 in all had come under observation. The results of this study up to December, 1924, are summarized in the following:

The study of yeast has been carried on along the same lines as was that of casein, of which, indeed, the former may be regarded as a continuation.

The yeast employed has throughout been a commercial preparation of brewers' yeast (Harris laboratories, Tuckahoe, N. Y.) in the form of a dry powder.

The therapeutic dose was arbitrarily fixed at approximately 1 gram per kilo of body weight. As the majority of our patients weighed in the neighborhood of 50 kilos, we found it convenient to adopt 50 grams as the daily dose of yeast to be given all patients with marked active symptoms. As soon as convalescence appeared established, a matter of 1 or 2 to 3 or 4 weeks, depending on the severity of the case, the dose was reduced to 15 grams. This smaller allowance was also that given the milder active cases and those without active symptoms. On February 27, 1924, the daily allowance was raised to 30 grams (Table IV). This increase was made because of a suspicion that 15 grams might not be a fully adequate allowance in all cases, since two or three patients who had been eating well for periods of four to six months had for some weeks before that date shown some diminution of appetite. Although no very significant effect on the appetite of these patients followed this increase, the dose was not again reduced.

The yeast was given in the food in equal portions at each of the three meals until December 1, 1923. After this date it was found convenient to give the daily dose at one time, generally in the cane sirup served at the supper meal.

As has been already mentioned, 26 patients in all were taken under treatment with yeast between May 26, 1923, and May 10, 1924. Nearly all presented more or less pronounced symptoms of pellagra or *pellagra sine pellagra*. The majority were patients with mild recurrent attacks that had developed, as already described, while taking the casein supplemented diet. With one exception all made prompt recoveries from the immediate attack. The exception was a case in a recently admitted patient with symptoms of central neuritis who died within 96 hours after admission and within 72 hours after coming under our observation.

The patients remained under observation on the yeast for varying periods. In one, this was for barely one month, at the end of which time she went home on furlough. In another, a complicating condition arose at the end of about four months, necessitating a transfer

to another ward and withdrawal from yeast for about eight weeks, at the end of which time she returned and resumed the yeast supplemented diet. In the third, the development of active pulmonary tuberculosis made permanent withdrawal necessary by reason of transfer to another section of the institution. Two others went home on furlough in good physical condition at the end of five and six months, respectively. Of the remaining 20 patients, 1 has been under observation for about 7, and 19 for from 12 to 18 months. None has shown any recognizable evidence of a relapse or recurrence of the disease.

Since experience has convinced us that without the yeast supplement fully 40 or 50 per cent of our patients would have developed a relapse or recurrence of pellagra (with the distinctive dermatitis) within the period of observation, this result would appear very clearly to indicate that the brewers' yeast supplied an essential or the essential preventive factor or factors.[8]

PREVENTIVE FACTORS

Having presented the results of our studies, we may now consider the significance of their indications with respect to the dietary essentials concerned in the prevention and, incidentally, in the causation of pellagra.

The results of previously published studies (3) have indicated that vitamin A, vitamin B, vitamin C, the antirachitic factor, and the mineral mixture could, with a very high degree of probability, be excluded from consideration in relation to the prevention of the disease. We need not at this time, therefore, concern ourselves further with these, but may pass on to a consideration of the other dietary essentials at present recognized, namely, the antisterility factor X of Evans and Bishop and the protein or, more specifically, the biological quality of the protein, since previous studies have already indicated that the quantity of protein is not necessarily involved.

With respect to the factor X, it may be said that since fresh green leaves and whole cereals are reported by Evans and Bishop (7) to be rich in this factor, our experience would tend to warrant its elimination from the relationship under present consideration, for the occurrence of the disease has been repeatedly observed by us in association with diets containing sifted whole cornmeal and such leafy vegetables as cabbage, collards, and turnip greens. (See, for example, diet shown in Table I.) That factor X may be excluded

[8] In this connection it may be stated that the results of a test of the Osborne and Wakeman (8) yeast fraction in the form of "yeast vitamin (Harris) powder" of the Harris laboratories, Tuckahoe, N. Y., in a number of cases with active symptoms have been so favorable as to encourage the expectation that this fraction also will prove to be rich in the pellagra-preventive factor or factors. The dose employed has been 15 grams a day in solution in ordinary tap water. The study of this preparation is still in progress.

would seem even more strongly indicated by the results of our study with yeast. Reported by Evans and Bishop (7) to be devoid of their antisterility factor, dried yeast[9] has in our experience clearly shown itself to possess pronounced pellagra-preventive action.

Turning to the protein factor, we may consider in relation thereto the significance, first of all, of the preventive failure of the soy-bean supplemented diet (Table I). From the best estimate that we have been able to make, it appears that the basic institution diet of 1918 probably furnished our patients with not over about 50 grams of protein. If to this is added the protein of the soy-bean supplement, estimated at approximately 20 grams (soy beans 56 grams × 36.5 per cent protein), the total gross protein supply of this diet amounted to some 70 grams. Of this protein mixture, very nearly one-half was a combination from meat and soy beans. Since there is reason to believe that both of these (when taken in sufficient quantity) yield protein of adequate quality, it is possible that the protein mixture of this diet was adequate for the nutritive needs of our patients, and thus it is possible that the preventive failure of the diet under consideration was not due to an amino acid defect but to some heretofore unrecognized complex. Whether this protein mixture was actually nutritively adequate can not be decided on the basis of available data, so that the result of the soy-bean study does not in itself afford a sound basis for judging of the preventive rôle of the protein factor.

Passing next to the outcome of the casein study, we find that a supplement of 69 grams appeared in considerable measure to prevent or notably to delay the distinctive dermatitis, but failed to prevent, though it may have delayed, the relapse or recurrence of some of the other symptoms of the disease. Since the quality (and quantity) of the protein mixture resulting from the large casein addition may reasonably be assumed to have been adequate for normal nutrition in our patients, it would seem permissible to conclude that the protein of the diet, if it be concerned in the prevention (or causation) of pellagra, is not the sole preventive (or causative) factor, and thus that some other heretofore unrecognized or unappreciated dietary complex also plays an essential part.

This interpretation would appear to receive support from the results of the dried-milk study. As has already been stated, the dried skim milk appeared decidedly more efficient than the casein in the prevention of symptoms other than the distinctive dermatitis. This would tend to suggest that the milk supplied something other than protein having this beneficial action of which the casein supplied little or none at all. This suggestion gains some weight from the indication of inferior preventive potency of dried skim milk as compared (on the basis of

[9] The yeast used by us was secured from the same source (Harris laboratories) as that used by Evans and Bishop (7).

protein content) with fresh buttermilk. It gains very much more weight, however, from the evidence of a pronounced pellagra-preventive action of dried yeast. In a daily dose of between 15 and 30 grams, representing less than 15 grams of protein, this has, as we have already seen, shown itself very efficient in preventing the disease. In view of the failure of the casein to prevent the *pellagra sine pellagra* syndrome, it is difficult to attribute the very favorable action of the yeast to its protein content, which, at best, was not over one-fourth that supplied by the casein. It seems warranted to conclude, therefore, that in the prevention of pellagra there is concerned a heretofore unrecognized or unappreciated dietary factor that was contained abundantly in our dried yeast, slightly in our dried skim milk, and inappreciably in our casein.

Considering the relatively small amount of protein furnished by the effective dose of yeast, it would seem as if the heretofore unrecognized pellagra-preventive factor, to which we shall hereafter refer as factor P-P, were capable of preventing the disease with little if any cooperation from the protein factor of the diet. On the other hand, in the light of the outcome of our casein study, it would seem as if a liberal supply of a presumably good protein mixture may in itself be capable of modifying the clinical picture of the disease by notably delaying or preventing the appearance of the distinctive dermatitis. This, it may here be recalled, is in harmony with Goldberger and Wheeler's suggestion (9) that pellagra, clinically, possibly includes at least two commonly associated but etiologically essentially distinct though closely related syndromes, namely, (*a*) the syndrome that is comprehended by the phrase "*pellagra sine pellagra,*" and (*b*) the dermatitis or pellagra without or with only slight subjective manifestations. But since the action of the protein mixture of the diet in the casein study may conceivably have been due not to the protein *per se* but to factor P–P carried as an impurity in the casein or since this action, on the more reasonable assumption that it was due entirely to the protein, may be conceived to have been of an indirect or sparing nature, it is possible that factor P–P plays the sole essential rôle in the prevention (and thus in the causation) of pellagra.

The foregoing discussion and the results presented would seem to warrant the following conclusions:

(*a*) A iberal supply of protein presumably of good biological quality does not completely prevent, though it may modify, the clinical picture of pellagra by notably delaying or preventing the development of the distinctive dermatitis. This modifying action may be of an indirect, sparing nature.

(*b*) In the prevention (and presumably causation) of pellagra there is concer ed a heretofore unrecognized or unappreciated dietary

factor which we designate as factor P–P. This may be effective with but little, possibly without any, cooperation from the protein factor.

(*c*) Factor P–P may possibly play the sole essential rôle in the prevention (and causation) of pellagra.

(*d*) Factor P–P is present in brewers' yeast, in milk and (on the basis of our experience with fresh meat) in lean beef; it is very low or lacking in dry soy beans, dry cowpeas, butter, cod-liver oil, and canned tomatoes. (See diet table II).

ACKNOWLEDGMENTS

We wish again to acknowledge our great indebtedness to the board of trustees, the superintendent, the clinical director, staff and other officers of the Georgia State Sanitarium for their continued cooperation in facilitating our studies.

TABLE I.—*Estimated average composition of soy-bean-supplemented institution diet furnished the colored female inmates of the Georgia State Sanitarium, 1918*

[Calories, 2,263]

Diet		Nutrients		
Articles of diet	Quantity (grams)	Protein (grams)	Fat (grams)	Carbohydrate (grams)
Wheat flour	100	11.4	1.0	75.1
Corn meal [1]	140	11.8	6.6	103.6
Corn grits	60	5.5	1.1	45.7
Rice	28	2.2	.1	22.1
Cowpeas [2]	14	3.0	.2	8.5
Meat [3]	56	13.0	1.4	
Fat	42		42.0	
Sugar [4]	50			50.0
Sweet potatoes [5]	120	2.1	.8	32.9
Soy beans [6]	56	20.0	9.8	17.2
Total nutrients		69.0	63.0	355.1
Nutrients per 1,000 calories		30.5	27.8	157.1

[1] A whole meal, sifted in the kitchen, used in making corn bread, for which a small amount of buttermilk was frequently used.
[2] The cowpeas were from time to time replaced by Lima beans or navy beans.
[3] The "meat" was principally beef and most commonly thoroughly "roasted" in a steam-jacketed cooker. Some of the beef so prepared was ground up, baked in an oven, and mixed with grits or grits and potatoes to make a "hash." The quantity stated is an estimate of the total served in terms of lean muscle
[4] Includes sugar for coffee and cane sirup served at supper.
[5] This represents the fresh vegetable component, which actually varied considerably as to kind and quantity and was markedly seasonal. Irish potatoes, turnips, cabbage, collards, or turnip greens, singly or in various combinations, were the most common substitutes
[6] Quantity ingested, after deducting waste and allowing for reduced digestibility.

Table II.—*Approximate composition of the casein-supplemented diet offered daily to each of a group of colored female pellagrins during 1922*

[Calories, 2,356]

Diet		Nutrients		
Articles of diet	Quantity (grams)	Protein (grams)	Fat (grams)	Carbohydrate (grams)
Basic:				
Corn meal [1]	130	10.9	6.1	96.2
Corn grits	66	6.1	1.3	49.8
Wheat flour	100	11.4	1.0	75.1
Rice	28	2.2	.1	22.1
Cowpeas [2]	14	3.0	.2	8.5
Lard	56		56.0	
Sirup	90			63.9
Supplemental:				
Casein [3]	69	60.5		
Cod-liver oil	15		15.0	
Tomato juice [4]	130			
Dilute hydrochloric acid (U. S. P.), 90 drops [5]				
Calcium carbonate [6]	3			
Sirup iodid iron (U. S. P.), 2 drops [6]				
Total nutrients		94.1	79.7	315.6
Nutrients per 1,000 calories		39.9	33.8	133.7

[1] Whole maize meal, sifted in the kitchen.
[2] Served in place of the dry legume ration of the institution diet.
[3] This was 46 grams up to June 22.
[4] From canned tomatoes. Served in place of the variable institution ration of fresh vegetables.
[5] Given with a view of correcting a possible gastric anacidity so very common in pellagrins.
[6] Given to improve mineral composition of the diet.

Table III.—*Approximate composition of dried skim milk supplemented diet offered daily to each of a group of white female pellagrins during 1923–24*

[Calories: 2,121]

Diet		Nutrients		
Articles of diet	Quantity (grams)	Protein (grams)	Fat (grams)	Carbohydrate (grams)
Basic:				
Corn meal [1]	130	10.9	6.1	96.2
Corn grits	40			
Wheat flour	80	9.1	.8	60.0
Rice	14	.7	.0	11.1
Cowpeas [2]	28	6.0	.4	17.0
Lard	20		20.0	
Vegetable cooking oil	30		30.0	
Sirup	90			63.9
Supplemental:				
Dried skim milk	105	36.6	.3	55.5
Tomato juice [3]	130			
Cod-liver oil	15		15.0	
Dilute hydrochloric acid (U. S. P.), 90 drops [4]				
Total nutrients		63.3	72.6	303.7
Nutrients per 1,000 calories		29.8	34.2	143.2

[1] Whole maize meal, sifted in the kitchen.
[2] Served in place of the variable dry legume ration of the institution.
[3] From canned tomatoes. Served in place of variable institution ration of fresh vegetables.
[4] Given with a view of correcting possible gastric anacidity so very common in pellagrins.

TABLE IV.—*Approximate composition of dried yeast supplemented diet offered daily to each of a group of colored female pellagrins during 1923-24*

[Calories: 2,224]

Diet		Nutrients		
Articles of diet	Quantity (grams)	Protein (grams)	Fat (grams)	Carbohydrate (grams)
Basic:				
Corn meal [1]	140	11.8	6.3	103.6
Grits	48	4.4	.9	36.2
Wheat flour	70	8.0	.7	52.5
Rice	28	2.2	.1	22.1
Cowpeas [2]	14	3.0	.2	8.5
Lard	56		56.0	
Vegetable cooking oil	15		15.0	
Sirup	90			63.9
Supplemental:				
Dried brewers' yeast	30	12.5	.5	14.2
Cod-liver oil	15		15.0	
Tomato juice [3]	130			
Dilute hydrochloric acid (U. S. P.), 90 drops[4]				
Calcium carbonate [5]	3			
Sirup iodid of iron (U. S. P.), 2 drops.[5]				
Total nutrients		41.9	94.7	301.0
Nutrients per 1,000 calories		18.9	42.7	130.6

[1] Whole maize meal sifted in the kitchen.
[2] Served in place of the variable dry legume ration of the institution.
[3] From canned tomatoes: Served in place of the variable institution ration of fresh vegetables.
[4] Given with a view of correcting a possible gastric anacidity so very common in pellagrins.
[5] Given to improve the mineral composition of the diet.

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DEATH RATES OF MOTHERS FROM CHILDBIRTH, 1923

The Department of Commerce announces slightly higher death rates of mothers from childbirth or puerperal causes in 1923 than in 1922.

For the 10 States and the District of Columbia (constituting the "Birth Registration Area" of 1915) the death rate from puerperal causes in 1923 was 6.4 per 1,000 live births as compared with 6.2 in 1922, 6.5 in 1921, and 6.1 in 1915.

Of the 30 States for which figures are available for 1923 and 1922, 14 show higher rates from puerperal causes in 1923. South Carolina has the highest 1923 death rate from puerperal causes (9.7 per 1,000 live births), and Utah the lowest (5). Separate rates for the white and colored are shown for only 6 States—Kentucky, Maryland, Mississippi, North Carolina, South Carolina, and Virginia. For 1923 the highest rate for white persons appears for South Carolina (7.4), and the lowest (5.4) for both Kentucky and Maryland; whereas for the colored the highest rate (15.4) is for Kentucky, and the lowest (8.3) for Maryland.

Death rates from puerperal causes per 1,000 live births in the birth registration area and each registration State

Area	Death rates per 1,000 live births											
	All puerperal causes				Puerperal septicemia				Other puerperal causes			
	1923	1922	1921	1915	1923	1922	1921	1915	1923	1922	1921	1915
Birth registration area	6.7	6.6	6.8	6.1	2.5	2.4	2.7	2.4	4.1	4.2	4.1	3.7
1915 birth registration area [1]	6.4	6.2	6.5	6.1	2.4	2.2	2.6	2.4	3.9	4.0	3.9	3.7
Registration States:												
California	6.7	7.2	6.8	[2]	2.6	2.6	3.0	[2]	4.1	4.6	3.9	[2]
Connecticut	5.7	5.7	5.3	5.6	2.1	2.0	2.2	1.9	3.6	3.7	3.1	3.7
Delaware	8.4	6.6	6.3	[2]	4.4	3.0	3.0	[2]	4.0	3.6	3.4	[2]
Illinois	6.4	6.3	[2]	[2]	2.7	2.4	[2]	[2]	3.8	3.9	[2]	[2]
Indiana	6.5	6.6	6.9	[2]	3.1	3.1	3.4	[2]	3.3	3.5	3.5	[2]
Kansas	6.8	7.6	6.4	[2]	3.2	3.3	2.9	[2]	3.7	4.3	3.6	[2]
Kentucky (total)	6.0	6.1	6.3	[2]	2.5	2.8	2.9	[2]	3.5	3.3	3.3	[2]
White	5.4	5.4	5.7	[2]	2.2	2.4	2.6	[2]	3.3	3.0	3.0	[2]
Colored	15.4	18.5	14.8	[2]	7.7	9.4	7.0	[2]	7.7	9.1	7.7	[2]
Maine	8.7	7.6	7.4	6.8	1.8	2.1	1.9	2.1	6.9	5.5	5.5	4.7
Maryland (total)	6.0	5.9	6.7	[2]	2.2	2.0	2.4	[2]	3.8	3.9	4.3	[2]
White	5.4	5.3	6.0	[2]	2.0	1.6	2.0	[2]	3.4	3.7	3.9	[2]
Colored	8.3	8.4	9.6	[2]	2.9	3.6	3.7	[2]	5.4	4.8	5.9	[2]
Massachusetts	6.3	6.8	6.5	5.7	2.0	2.1	2.2	1.7	4.3	4.6	4.3	4.1
Michigan	7.0	6.9	6.9	6.7	3.0	2.5	3.1	2.5	4.1	4.3	3.8	4.1
Minnesota	6.0	4.9	5.7	5.2	2.8	1.8	2.6	1.8	3.3	3.1	3.1	3.4
Mississippi (total)	8.8	8.3	9.5	[2]	3.0	2.7	3.1	[2]	5.8	5.6	6.4	[2]
White	6.6	6.5	7.1	[2]	2.1	1.8	2.2	[2]	4.4	4.6	4.9	[2]
Colored	10.9	10.0	12.0	[2]	3.8	3.6	4.0	[2]	7.1	6.5	8.0	[2]
Montana	7.5	7.9	[2]	[2]	3.8	3.8	[2]	[2]	3.7	4.1	[2]	[2]
Nebraska	5.8	5.8	6.6	[2]	2.3	2.3	2.7	[2]	3.5	3.5	3.9	[2]
New Hampshire	7.4	6.5	6.2	6.1	1.6	0.9	1.7	1.9	5.8	5.5	4.5	4.2
New Jersey	5.7	6.4	5.9	[2]	2.3	2.6	2.4	[2]	3.4	3.8	3.4	[2]
New York	5.7	6.0	6.3	5.9	2.1	2.2	2.5	2.6	3.6	3.8	3.8	3.3
North Carolina (total)	8.0	8.0	7.3	[2]	1.8	2.0	1.9	[2]	6.2	6.0	5.5	[2]
White	6.7	7.0	6.1	[2]	1.4	1.6	1.4	[2]	5.3	5.5	4.7	[2]
Colored	10.7	9.9	10.2	[2]	2.6	2.8	3.0	[2]	8.1	7.2	7.2	[2]
Ohio	7.2	6.6	7.2	[2]	2.9	2.5	3.4	[2]	4.3	4.2	3.8	[2]
Oregon	6.9	8.3	7.4	[2]	2.5	2.7	3.0	[2]	4.4	5.5	4.5	[2]
Pennsylvania	6.6	6.2	6.8	6.4	2.8	2.4	2.9	2.7	3.8	3.8	3.9	3.7
Rhode Island	6.3	5.5	7.1	6.6	2.4	1.5	3.2	1.9	3.9	4.0	3.9	4.7
South Carolina (total)	9.7	10.7	9.8	[2]	2.1	3.1	2.6	[2]	7.6	7.6	7.2	[2]
White	7.4	8.5	7.8	[2]	1.4	1.8	1.7	[2]	6.0	6.8	6.0	[2]
Colored	12.2	12.8	11.8	[2]	2.9	4.5	3.4	[2]	9.3	8.3	8.4	[2]
Utah	5.0	5.5	7.3	[2]	1.7	1.5	2.9	[2]	3.3	4.0	4.3	[2]
Vermont	7.0	7.4	7.3	6.1	1.5	1.5	2.5	1.5	5.5	6.0	4.8	4.6
Virginia (total)	7.4	7.2	7.0	[2]	2.3	2.2	2.3	[2]	5.1	5.0	4.7	[2]
White	6.0	5.8	5.7	[2]	2.0	1.6	1.8	[2]	4.0	4.3	3.9	[2]
Colored	10.8	10.2	9.9	[2]	3.1	3.6	3.5	[2]	7.7	6.5	6.4	[2]
Washington	6.7	7.9	7.8	[2]	3.1	3.0	3.6	[2]	3.5	4.9	4.2	[2]
Wisconsin	5.8	5.6	5.8	[2]	2.3	1.9	2.2	[2]	3.5	3.7	3.6	[2]
Wyoming	7.3	7.1	[2]	[2]	1.2	2.1	[2]	[2]	6.1	5.0	[2]	[2]

[1] Includes the 6 New England States, Michigan, Minnesota, New York, Pennsylvania, and the District of Columbia.
[2] Not added to the registration area until a later date.

DEATHS DURING WEEK ENDED DECEMBER 27, 1924

Summary of information received by telegraph from industrial insurance companies for week ended December 27, 1924, and corresponding week of 1923. (From the Weekly Health Index, December 30, 1924, issued by the Bureau of the Census, Department of Commerce)

	Week ended Dec 27, 1924	Corresponding week, 1923
Policies in force	57, 840, 977	54, 424, 373
Number of death claims	8, 858	8, 785
Death claims per 1,000 policies in force, annual rate	8. 0	8. 4

Deaths from all causes in certain large cities of the United States during the week ended December 27, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923. (From the Weekly Health Index, December 30, 1924, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Dec. 27, 1924		Annual death rate per 1,000 corresponding week, 1923	Deaths under 1 year		Infant mortality rate, week ended Dec 27, 1924 [2]
	Total deaths	Death rate [1]		Week ended Dec. 27, 1924	Corresponding week, 1923	
Total (63 cities)	6, 564	12. 8	[3] 12. 4	781	[3] 698	
Akron	37			10	5	106
Albany	39	17. 2	18. 2	2	3	46
Atlanta	73	16. 7	17. 8	13	9	
Baltimore [4]	204	13. 6	12. 5	27	21	80
Birmingham	50	13. 0	16. 0	6	14	
Boston	237	15. 9	14 2	29	24	80
Bridgeport	33			4	5	64
Buffalo	147	14 1	12. 3	19	19	80
Cambridge	21	9 8	11. 2	2	4	35
Camden	24	9. 9	10. 5	3	5	49
Chicago [4]	627	11. 1	11. 1	79	71	74
Cincinnati	150	19. 2	15. 4	18	11	113
Cleveland	173	9. 9	8. 7	29	18	74
Columbus	79	15. 4	13. 8	13	7	123
Dallas	45	12. 5	12 6	5	7	
Dayton	37	11. 4	10. 4	4	6	67
Denver	98			7	9	
Des Moines	27	9. 7	14. 8	1	2	
Detroit	234			48	48	89
Duluth	19	9. 1	8 3	2	2	43
Erie	29			3	3	62
Fall River [4]	33	14. 2	12 1	9	6	127
Flint	14			4	2	69
Fort Worth	32	11. 3	11. 6	4	8	
Grand Rapids	30	10. 5	8. 9	4	2	62
Houston	51			7	7	
Indianapolis	82	12. 2	17. 2	7	13	51
Jacksonville, Fla	36	18. 3	14. 6	3	5	
Kansas City, Kans	26	11. 5	14. 4	4	4	77
Kansas City, Mo	90	13. 0	11. 9	8	14	
Los Angeles	244			25	25	78
Louisville	46	9. 3	12. 3	6	3	56
Lowell	31	14. 0	12. 2	4	3	71
Lynn	33	16. 6	7. 1	4	1	101
Memphis	64	19. 4	16. 2	6	6	
Milwaukee	107	11. 3	8. 3	18	10	85
Minneapolis	91	11. 4	12. 5	8	13	43
Nashville [4]	31	13. 1	16. 2	3	5	
New Bedford	27	10. 6	6. 0	4	6	62
New Haven	37	11. 0	12. 7	7	8	92
New Orleans	178	22. 7	17. 1	20	8	
New York	1, 422	12. 3	11. 5	158	151	64
Bronx Borough	163	9. 8	9. 4	14	9	49
Brooklyn Borough	468	11. 1	11. 0	55	57	59
Manhattan Borough	649	15. 0	13. 2	76	71	77
Queens Borough	113	10. 6	8. 2	13	10	65
Richmond Borough	29	11. 6	18. 8	0	4	0

[1] Annual rate per 1,000 population.

[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1923. Cities left blank are not in the registration area for births.

[3] Data for 61 cities.

[4] Deaths for week ended Friday, December 26, 1924.

Deaths from all causes in certain large cities of the United States during the week ended December 27, 1924, infant mortality, annual death rate, and comparison with corresponding week of 1923. (From the Weekly Health Index, December 30, 1924, issued by the Bureau of the Census, Department of Commerce)—Continued.

City	Week ended Dec. 27, 1924		Annual death rate per 1,000 corresponding week, 1923	Deaths under 1 year		Infant mortality rate, week ended Dec. 27, 1924 [2]
	Total deaths	Death rate [1]		Week ended Dec. 27, 1924	Corresponding week, 1923	
Newark, N. J	90	10.5	10.0	9	11	42
Norfolk	36	11.4	6.6	2	2	36
Oakland	60	12.7	10.4	4	3	50
Oklahoma City	20	10.0		2		
Omaha	48	12.0	11.5	5	5	54
Paterson	37	13.7	15.3	8	6	136
Philadelphia	489	13.1	12.8	61	50	78
Pittsburgh	166	13.8	15.1	23	32	78
Portland, Oreg	74	13.9	10.9	11	5	114
Providence	60	12.8	12.5	7	5	57
Richmond	55	15.6	18.1	4	9	49
Rochester	63	10.1		6		47
St. Louis	211	13.5	14.5	17	15	
St. Paul	59	12.6	9.7	0	6	0
San Antonio	73	19.9	10.7	11	3	
San Francisco	165	15.7	16.0	9	5	54
Schenectady	17	8.8	9.5	2	2	59
Seattle	67			3	1	29
Somerville	21	10.9	13.7	1	1	27
Spokane	25			3	1	66
Springfield, Mass	27	9.5	11.9	4	3	68
Syracuse	37	10.3	12.2	6	6	75
Tacoma	21	10.6	10.8	2	1	48
Toledo	59	11.1	13.6	6	11	56
Trenton	34	13.7	18.4	5	7	83
Utica	26	12.9	14.1	5	0	109
Washington, D. C	148	15.8	15.6	25	8	145
Waterbury	18			3	3	70
Wilmington, Del	30	13.0	14.6	5	2	112
Worcester	46	12.3	14.9	5	4	60
Yonkers	17	8.1	9.7	2	3	44
Youngstown	27	9.1	10.4	5	4	69

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1923. Cities left blank are not in the registration area for births.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended January 3, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	1
Chicken pox	64
Diphtheria	30
Dysentery	53
Influenza	166
Lethargic encephalitis	1
Malaria	10
Measles	8
Mumps	75
Pellagra	8
Pneumonia	113
Scarlet fever	23
Smallpox	98
Tuberculosis	23
Typhoid fever	16
Whooping cough	27

ARIZONA

	Cases
Diphtheria	1
Measles	11
Mumps	24
Ophthalmia neonatorum	1
Scarlet fever	1
Whooping cough	9

ARKANSAS

	Cases
Cerebrospinal meningitis	1
Chicken pox	21
Diphtheria	5
Hookworm disease	1
Influenza	146
Malaria	30
Measles	13
Mumps	4
Pellagra	2
Scarlet fever	7
Smallpox	5
Tuberculosis	11
Typhoid fever	19
Whooping cough	21

CALIFORNIA

	Cases
Cerebrospinal meningitis—San Francisco	1
Diphtheria	138
Influenza	16
Lethargic encephalitis:	
Pomona	1
Santa Ana	1
Measles	31
Poliomyelitis.	
Berkeley	1
San Diego	1
San Francisco	1
Oakland	1
Scarlet fever	119
Smallpox:	
Los Angeles	24
Los Angeles County	9
Oakland	16
Scattering	36
Typhoid fever	14

COLORADO

(Exclusive of Denver)

	Cases
Chicken pox	41
Diphtheria	10
Impetigo contagiosa	3
Influenza	1
Measles	1
Mumps	23
Ophthalmia neonatorum	1
Pneumonia	4
Scarlet fever	34
Septic sore throat	2
Tuberculosis	51
Typhoid fever	1
Whooping cough	5

CONNECTICUT

	Cases
Chicken pox	65
Diphtheria	100
Dysentery (bacillary)	1

CONNECTICUT—continued

	Cases
German measles	17
Influenza	7
Measles	14
Mumps	15
Pneumonia (all forms)	31
Poliomyelitis	2
Scarlet fever	199
Septic sore throat	2
Tuberculosis (all forms)	27
Typhoid fever	4
Whooping cough	47

DELAWARE[1]

Chicken pox	1
Diphtheria	8
Mumps	2
Pneumonia	5
Scarlet fever	8
Tuberculosis	5
Whooping cough	3

FLORIDA

Cerebrospinal meningitis	1
Diphtheria	19
Influenza	2
Malaria	11
Scarlet fever	2
Typhoid fever	9

GEORGIA

Chicken pox	9
Diphtheria	11
Hookworm disease	2
Influenza	36
Malaria	3
Mumps	5
Pellagra	1
Pneumonia	31
Scarlet fever	5
Smallpox	3
Tuberculosis (pulmonary)	13
Typhoid fever	5
Whooping cough	7

ILLINOIS

Diphtheria:	
Cook County	83
Scattering	40
Influenza	13
Lethargic encephalitis.	
Cook County	3
Randolph County	1
Measles	234
Pneumonia	386
Poliomyelitis:	
Hiatt County	1
Jo Daviess County	1
Schuyler County	1
Scarlet fever:	
Cook County	176
Kane County	9
St. Clair County	14
Will County	9
Scattering	103

ILLINOIS—continued

	Cases
Smallpox	16
Tuberculosis	171
Typhoid fever	47
Whooping cough	164

INDIANA

Cerebrospinal meningitis	1
Chicken pox	123
Diphtheria	62
Influenza	82
Measles	155
Mumps	12
Pneumonia	22
Scarlet fever:	
Allen County	9
Elkhart County	22
Huntington County	9
La Porte County	10
St. Joseph County	19
Vigo County	13
Scattering	67
Smallpox:	
Kosciusko County	11
Vigo County	9
Scattering	34
Tuberculosis	26
Typhoid fever	9
Whooping cough	19

IOWA

Diphtheria	20
Scarlet fever	44
Smallpox	47

KANSAS

Cerebrospinal meningitis	3
Chicken pox	139
Diphtheria	30
Dysentery	1
Influenza	18
Lethargic encephalitis	1
Measles	3
Mumps	153
Pneumonia	38
Poliomyelitis	1
Scarlet fever	91
Smallpox	3
Tuberculosis	56
Typhoid fever	1
Whooping cough	9

LOUISIANA

Diphtheria	25
Influenza	16
Lethargic encephalitis	1
Measles	3
Pneumonia	43
Scarlet fever	5
Smallpox	16
Tuberculosis	29
Typhoid fever	19

[1] For two weeks ended January 3, 1925.

MAINE

	Cases
Chicken pox	60
Diphtheria	6
Influenza	9
Measles	31
Mumps	82
Pneumonia	18
Scarlet fever	25
Septic sore throat	7
Tuberculosis	4
Typhoid fever	4
Vincent's angina	1
Whooping cough	4

MARYLAND[1]

Cerebrospinal meningitis	1
Chicken pox	53
Diphtheria	37
Influenza	149
Lethargic encephalitis	3
Measles	19
Mumps	14
Ophthalmia neonatorum	2
Paratyphoid fever	1
Pneumonia (all forms)	136
Scarlet fever	106
Septic sore throat	4
Tetanus	1
Trachoma	1
Tuberculosis	52
Typhoid fever	19
Whooping cough	46

MASSACHUSETTS

Anthrax	2
Cerebrospinal meningitis	2
Chicken pox	257
Conjunctivitis (suppurative)	20
Diphtheria	148
German measles	63
Influenza	14
Lethargic encephalitis	3
Measles	192
Mumps	77
Ophthalmia neonatorum	14
Pneumonia (lobar)	120
Scarlet fever	399
Septic sore throat	5
Tuberculosis (all forms)	98
Typhoid fever	12
Whooping cough	83

MICHIGAN

Diphtheria	90
Measles	124
Pneumonia	82
Scarlet fever	251
Smallpox	14
Tuberculosis	188
Typhoid fever	19
Whooping cough	62

MINNESOTA

Chicken pox	97
Diphtheria	42
Influenza	2

MINNESOTA—continued

	Cases
Lethargic encephalitis	1
Measles	12
Pneumonia	8
Poliomyelitis	1
Scarlet fever	219
Smallpox	83
Trachoma	5
Tuberculosis	99
Typhoid fever	4
Whooping cough	19

MISSISSIPPI

Diphtheria	14
Scarlet fever	2
Smallpox:	
Amite County	40
Scattering	15
Typhoid fever	1

MISSOURI

Cerebrospinal meningitis	1
Chicken pox	31
Diphtheria	41
Influenza	2
Measles	4
Mumps	5
Pneumonia	6
Poliomyelitis	1
Scarlet fever	157
Septic sore throat	2
Smallpox	5
Tuberculosis	16
Whooping cough	4

MONTANA

Diphtheria	13
Poliomyelitis—Kalispell R. F. D	1
Smallpox	19

NEW JERSEY

Cerebrospinal meningitis	2
Chicken pox	167
Diphtheria	115
Influenza	28
Measles	89
Pneumonia	210
Scarlet fever	173
Smallpox	4
Trachoma	1
Trichinosis	1
Typhoid fever	21
Whooping cough	204

NEW MEXICO

Chicken pox	27
Diphtheria	1
Influenza	4
Measles	21
Pneumonia	4
Scarlet fever	8
Smallpox	2
Tuberculosis	3
Whooping cough	2

[1] Week ended Friday.

NEW YORK

(Exclusive of New York City)

	Cases
Cerebrospinal meningitis	1
Diphtheria	110
Influenza	35
Lethargic encephalitis	7
Measles	174
Pneumonia	289
Poliomyelitis	6
Scarlet fever	390
Smallpox	10
Typhoid fever	55
Whooping cough	213

NORTH CAROLINA

Chicken pox	126
Diphtheria	76
German measles	1
Measles	34
Scarlet fever	59
Septic sore throat	15
Smallpox	40
Typhoid fever	11
Whooping cough	100

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Diphtheria	18
Smallpox	13
Typhoid fever	31

OREGON

Chicken pox	23
Diphtheria:	
Portland	9
Scattering	3
Influenza	4
Lethargic encephalitis	2
Measles	3
Mumps	1
Pneumonia	[1] 12
Scarlet fever:	
Hood River County	14
Scattering	25
Smallpox:	
Portland	13
Scattering	4
Tuberculosis	19
Typhoid fever	1
Whooping cough	6

SOUTH DAKOTA

Chicken pox	1
Measles	2
Pneumonia	2
Scarlet fever	46
Smallpox	21
Typhoid fever	2

TEXAS

	Cases
Cerebrospinal meningitis	3
Chicken pox	168
Dengue	9
Diphtheria	71
Dysentery (epidemic)	3
Influenza	972
Lethargic encephalitis	2
Malta fever	12
Measles	103
Mumps	142
Paratyphoid fever	3
Pellagra	25
Pneumonia	123
Poliomyelitis	1
Rabies (human)	1
Scarlet fever	55
Smallpox	73
Tetanus	2
Trachoma	8
Tuberculosis	62
Typhoid fever	29
Whooping cough	72

VERMONT

Chicken pox	46
Diphtheria	5
Measles	3
Mumps	31
Scarlet fever	14
Typhoid fever	1
Whooping cough	26

WASHINGTON

Chicken pox	83
Diphtheria	32
Measles	28
Mumps	44
Pneumonia	1
Poliomyelitis:	
Kitsap County	1
Thurston County	1
Scarlet fever	44
Smallpox	27
Tuberculosis	25
Typhoid fever	8
Whooping cough	9

WEST VIRGINIA

Diphtheria	8
Scarlet fever	6
Smallpox	6
Typhoid fever	3

WISCONSIN

Milwaukee:	
Cerebrospinal meningitis	1
Chicken pox	21
Diphtheria	8
German measles	25
Influenza	1
Lethargic encephalitis	2
Measles	172
Mumps	10
Pneumonia	2
Scarlet fever	11
Smallpox	1
Tuberculosis	21
Whooping cough	14

[1] Deaths.

WISCONSIN—continued

Scattering:	Cases
Chicken pox	204
Diphtheria	42
German measles	4
Influenza	35
Lethargic encephalitis	1
Measles	28
Mumps	42
Pneumonia	18
Scarlet fever	90
Smallpox	42

WISCONSIN—continued

Scattering—Continued.	Cases
Tuberculosis	13
Typhoid fever	3
Whooping cough	64

WYOMING

Chicken pox	9
Pneumonia	1
Scarlet fever	3
Typhoid fever	2

Reports for Week Ended December 27, 1924

DISTRICT OF COLUMBIA

	Cases
Chicken pox	21
Diphtheria	7
Influenza	4
Measles	4
Pneumonia	20
Scarlet fever	28
Tuberculosis	18
Typhoid fever	5
Whooping cough	7

NEBRASKA

Chicken pox	11
Diphtheria	7

NEBRASKA—continued

	Cases
Measles	1
Mumps	1
Scarlet fever	8
Smallpox	14

NORTH DAKOTA

Chicken pox	40
Diphtheria	4
Measles	18
Mumps	10
Pneumonia	2
Poliomyelitis	1
Scarlet fever	36
Smallpox	22

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
November, 1924										
Idaho	1	10					1	28		3
Kansas	5	139	11	1	16			439	7	48
Maine		133	31		29		17	178		35
Montana	1	54	3		24		9	105	75	7
North Carolina	1	555			154		1	278		56
Ohio	4	684	21	1	125		24	1,466	360	107
South Dakota	1	53			6		11	187	49	16
Utah	1	108	59		134			60	17	22
Virginia	8	674	2,028	84	207	14	9	331	3	79
Washington	1	148			39		62	159	97	22

RECIPROCAL NOTIFICATION, NOVEMBER, 1924

Notifications regarding communicable diseases sent during the month of November, 1924, to other State health departments by departments of health of certain States

Referred by—	Actinomycosis	Diphtheria	Meningitis [1]	Poliomyelitis	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever
Connecticut					25		1	
Illinois	1						20	
Massachusetts								1
Minnesota				1		1	70	1
New Jersey					1			1
New York		1	1		3	2		3

[1] Meningococcus meningitis.

RODENT PLAGUE IN LOS ANGELES, CALIF.

The following items are taken from the report of plague-eradicative measures at Los Angeles, Calif., for the week ended December 20, 1924:

Rodents examined to Dec. 20, 1924:	
Rats	15, 607
Squirrels	513
Rodents examined during week ended Dec. 20, 1924:	
Rats	4, 208
Squirrels	158
Plague-infected rats found to Dec. 20, 1924	61
Plague-infected rats week ended Dec. 20, 1924	9

RODENT PLAGUE IN NEW ORLEANS, LA.

The following items are taken from the report of plague-eradicative measures at New Orleans, La., for the week ended December 20, 1924:

Number of vessels inspected for rat guards	755
Number of vessels fumigated with cyanide gas	42
Rodents examined for plague Dec. 4 to 20, 1924	3, 746
Rodents found positive for plague week ended Dec. 20, 1924	1

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended December 20, 1924, 34 States reported 2,003 cases of diphtheria. For the week ended December 22, 1923, the same States reported 2,668 cases of this disease. One hundred and four cities, situated in all parts of the country and having an aggregate population of more than 28,800,000 reported 1,102 cases of diphtheria for the week ended December 20, 1924. Last year, for the corresponding week, they reported 1,429 cases. The estimated expectancy for these cities was 1,426 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Twenty-nine States reported 1,398 cases of measles for the week ended December 20, 1924, and 8,571 cases of this disease for the week ended December 22, 1923. One hundred and four cities reported 778 cases of measles for the week this year, and 2,434 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: Thirty-four States—this year, 3,290 cases; last year, 3,498 cases. One hundred and four cities—this year, 1,722, last year, 1,603 cases; estimated expectancy, 1,003 cases.

Smallpox.—For the week ended December 20, 1924, 34 States reported 650 cases of smallpox. Last year, for the corresponding week, they reported 647 cases. One hundred and four cities reported smallpox for the week as follows: 1924, 248 cases; 1923, 194 cases; estimated expectancy, 88 cases. These cities reported 26 deaths

from smallpox for the week this year, 25 of which occurred at Minneapolis.

Typhoid fever.—Five hundred and fifty-eight cases of typhoid fever were reported for the week ended December 20, 1924, by 33 States. For the corresponding week of 1923 the same States reported 262 cases. One hundred and four cities reported 307 cases of typhoid fever for the week this year and 102 cases for the week last year. The estimated expectancy for these cities was 59 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 104 cities as follows: 1924, 997 deaths; 1923, 795 deaths.

City reports for week ended December 20, 1924

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported	Scarlet fever	
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported				Cases, estimated expectancy	Cases reported
NEW ENGLAND										
Maine:										
Lewiston	8	2	0	0	0	0	1	2	1	1
Portland	9	1	0	2	0	0	20	0	2	1
New Hampshire:										
Concord	0	1	0	0	0	0	0	1	0	0
Vermont.										
Barre	0	0	0	0	0	0	6	0	1	5
Burlington	6	1	0	0	0	0	2	0	2	1
Massachusetts:										
Boston	35	68	45	3	1	36	12	28	42	104
Fall River	4	5	5	0	0	0	3	2	2	0
Springfield	5	5	1	1	2	30	28	0	7	40
Worcester	23	5	10	0	0	1	1	1	10	10
Rhode Island:										
Pawtucket	0	3	0	0	0	0	0	7	1	7
Providence	0	15	11	1	1	0	0	10	9	6
Connecticut:										
Bridgeport	2	9	7	1	1	0	0	0	5	16
Hartford	1	9	10	0	0	0	0	1	7	7
New Haven	18	8	0	0	1	11	1	4	6	20
MIDDLE ATLANTIC										
New York:										
Buffalo	23	36	6	3	2	46	7	12	23	29
New York	183	224	224	30	18	50	27	234	153	201
Rochester	14	15	0	0	0	2	20	6	11	51
Syracuse	14	11	5	0	0	3	11	3	14	4
New Jersey:										
Camden	9	5	6	0	0	8	1	5	2	8
Newark	44	23	14	9	0	33	3	11	17	37
Trenton	1	10	4	2	0	0	0	2	2	4
Pennsylvania:										
Philadelphia	158	80	91	--------	9	32	24	78	53	128
Pittsburgh	84	31	15	--------	4	53	24	26	26	66
Reading	12	6	5	0	0	0	3	0	1	1
Scranton	0	5	2	0	1	0	0	6	3	0

City reports for week ended December 20, 1924—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported
E. NORTH CENTRAL										
Ohio:										
Cincinnati	12	19	16	1	2	1	0	16	12	15
Cleveland	153	45	60	4	3	3	33	27	35	33
Columbus	15	9	2	0	2	0	0	11	9	13
Toledo	34	15	4	0	0	6	0	3	15	21
Indiana:										
Fort Wayne		5							2	
Indianapolis	104	21	6	0	0	1	7	13	10	8
South Bend	8	1	1	0	0	1	0	4	3	7
Terre Haute	6	3	1	0	0	0	0	3	2	4
Illinois:										
Chicago	175	174	90	12	2	150	32	75	124	191
Cicero	1	3	0	0	0	1	0	0	1	6
Springfield	5	2	7	2	1	1	2	2	2	0
Michigan:										
Detroit	83	84	39	3	2	3	3	27	73	[illegible]
Flint	14	13	0	0	0	0	1	1	8	11
Grand Rapids	6	7	3	0	0	5	0	2	7	14
Wisconsin:										
Madison	20	2	2	0		1	129		3	5
Milwaukee	67	25	15	0	0	261	66	11	34	13
Racine	7	3	1	0	0	0	1	1	5	2
Superior	2	1	1	0	0	0	0	2	2	2
W. NORTH CENTRAL										
Minnesota:										
Duluth	30	2	0	0	0	0	0	2	5	13
Minneapolis	86	22	52		2	0	6	7	27	61
St. Paul	37	19	24	0	0	4	15	11	16	27
Iowa:										
Davenport	4	2	0	0		0	0		1	1
Des Moines	0	5	11	0		0	0		9	6
Sioux City	5	3	0	0		1	0		3	1
Waterloo	8	1	0	0		0	1		4	1
Missouri:										
Kansas City	15	14	4	3	2	3	4	3	11	60
St. Joseph	2	4	3	0	0	0	3	2	3	1
St. Louis	24	87	49	0	0	0	3		30	121
North Dakota:										
Fargo	12	1	1	0	0	0	9	1	1	1
Grand Forks	0	0	2	0		0	0		1	0
South Dakota:										
Aberdeen	3		0	0		0	0			1
Sioux Falls	2	1	1	0	0	0	0	0	2	1
Nebraska:										
Lincoln	9	2	3	0	0	0	0	1	2	3
Omaha	19	7	3	0	0	1	0	2	6	2
Kansas:										
Topeka		3							1	
Wichita	28	8	3	0	0	0	0	1	3	0
SOUTH ATLANTIC										
Delaware:										
Wilmington	6	3	1	0	0	0	2	2	4	1
Maryland:										
Baltimore	70	36	28	58	7	4	1	55	23	35
Cumberland		2	3	0	0	0		0	1	1
Frederick	0	1	0	0	0	0	0	1	0	0
District of Columbia:										
Washington	39	19	11	1	1	3		16	18	50
Virginia:										
Lynchburg	4	2	1	0	0	0	6	0	0	0
Norfolk	33	3	5	0	0	1	83	2	2	3
Richmond	3	10	4	0	1	1	1	6	5	3
Roanoke	5	3	1	0	1	0	0	0	1	0
West Virginia:										
Charleston	19	3	3	0	0	0	3	4	2	1
Huntington	0	2	3	0		0	0		1	2
Wheeling	15	2	1	0	0	1	0	0	1	2
North Carolina:										
Raleigh		2							1	
Wilmington	2	1	0	0	1	1	3	3	0	0
Winston-Salem		1							1	

City reports for week ended December 20, 1924—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported
SOUTH ATLANTIC—continued										
South Carolina:										
Charleston	1	2	0	0	0	0	0	2	1	1
Columbia	0	1	3	0	0	0	5	3	0	0
Greenville	0	1	0	0	0	0	0	3	0	0
Georgia:										
Atlanta	1	5	7	2	0	0	0	15	5	5
Brunswick	10	0	0	0	0	0	0	1	0	0
Savannah	1	2	0	0	0	0	0	3	1	0
Florida:										
St. Petersburg	1	0	0	0	0	0	0	1	0	1
Tampa	1	2	3	0	0	0	3	1	0	1
EAST SOUTH CENTRAL										
Kentucky:										
Covington	1	2	4	0	0	0	0	2	2	4
Lexington	4	1	1	0	0	0	0	2	0	3
Louisville	2	13	8	0	0	1	0	9	5	8
Tennessee:										
Memphis	8	9	3	0	2	0	3	12	4	6
Nashville	2	4	1	0	0	0	0	6	3	4
Alabama:										
Birmingham	21	4	7	6	2	1	2	23	4	17
Mobile	1	1	0	2	0	0	0	0	1	0
Montgomery	0	1	3	1	0	0	0	0	0	3
WEST SOUTH CENTRAL										
Arkansas:										
Fort Smith	8	2	0	0	--------	0	0	--------	1	3
Little Rock	0	2	1	0	0	2	1	1	2	2
Louisiana:										
New Orleans	1	13	19	7	4	1	0	13	4	20
Shreveport	3	--------	2	0	0	0	0	1	--------	0
Oklahoma:										
Oklahoma	1	2	1	0	0	0	0	4	3	1
Texas:										
Dallas	12	11	12	0	1	0	0	5	3	7
Galveston	0	2	1	0	0	0	0	3	1	1
Houston	2	4	1	0	3	0	0	5	2	4
San Antonio	1	2	6	0	0	1	1	4	1	3
MOUNTAIN										
Montana:										
Billings	5	0	0	0	0	0	0	2	1	2
Great Falls	6	1	7	0	0	1	1	0	1	2
Helena	--------	1	0	0	0	0	--------	0	1	1
Missoula	--------	0	4	0	0	0	--------	0	0	0
Idaho:										
Boise	3	1	0	0	0	0	0	0	1	2
Colorado:										
Denver	40	11	12	--------	4	2	25	18	10	14
Pueblo	16	6	1	0	1	0	0	4	3	0
New Mexico:										
Albuquerque	7	1	0	0	0	0	0	0	0	0
Utah:										
Salt Lake City	41	2	2	0	0	3	18	5	4	2
Nevada:										
Reno	0	0	0	0	0	0	0	0	1	2
PACIFIC										
Washington:										
Seattle	32	6	7	0	--------	0	8	--------	6	6
Spokane	12	4	21	0	--------	2	0	--------	6	2
Tacoma	11	3	3	0	--------	0	0	--------	4	3
Oregon:										
Portland	16	7	13	0	0	2	0	11	7	9
California:										
Los Angeles	--------	33	--------	--------	--------	--------	--------	--------	14	--------
Sacramento	--------	2	--------	--------	--------	--------	--------	--------	2	--------
San Francisco	16	27	12	9	1	5	24	6	11	17

City reports for week ended December 20, 1924—Continued

Division, State, and city	Population July 1, 1923, estimated	Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
		Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND										
Maine:										
Lewiston	33,790	0	0	0	0	0	1	0	0	13
Portland	73,129	0	0	0	1	0	3	1	0	15
New Hampshire:										
Concord	22,408	0	0	0	0	0	0	0	0	12
Vermont:										
Barre	[1] 10,008	0	0	0	0	0	0	0	0	2
Burlington	23,613	0	0	0	0	0	0	0	0	6
Massachusetts:										
Boston	770,400	0	0	0	13	1	1	0	6	215
Fall River	120,912	0	0	0	3	1	0	0	10	31
Springfield	144,227	0	0	0	1	0	0	0	1	30
Worcester	191,927	0	0	0	0	1	0	0	7	36
Rhode Island:										
Pawtucket	68,790	0	0	0	0	0	0	0	0	------
Providence	242,378	0	0	0	2	0	4	0	0	78
Connecticut:										
Bridgeport	[1] 143,555	0	0	0	1	0	2	0	1	33
Hartford	[1] 138,036	0	0	0	0	0	0	0	0	35
New Haven	172,967	0	0	0	2	1	2	0	6	43
MIDDLE ATLANTIC										
New York:										
Buffalo	536,718	0	1	0	9	1	2	0	13	139
New York	5,927,625	0	0	0	[2] 88	12	168	10	104	1,481
Rochester	317,867	0	0	0	5	1	9	0	3	71
Syracuse	184,511	0	0	0	1	1	1	0	0	38
New Jersey:										
Camden	124,157	0	2	1	0	0	1	0	2	27
Newark	438,699	0	0	0	5	1	4	0	93	93
Trenton	127,390	0	0	0	3	1	0	0	5	47
Pennsylvania:										
Philadelphia	1,922,788	0	0	0	25	3	8	3	68	533
Pittsburgh	613,442	1	0	0	10	1	6	1	4	149
Reading	110,917	0	0	0	0	0	0	0	5	22
Scranton	140,636	0	0	0	1	0	6	1	0	------
EAST NORTH CENTRAL										
Ohio:										
Cincinnati	406,312	1	1	0	7	1	1	0	4	122
Cleveland	888,519	2	1	0	20	1	0	1	26	222
Columbus	261,082	0	6	0	3	0	0	1	3	73
Toledo	268,338	1	0	0	5	1	3	1	9	55
Indiana:										
Fort Wayne	93,573	1	------	------	------	0	------	------	------	------
Indianapolis	342,718	3	5	0	9	0	0	0	6	99
South Bend	76,709	1	0	0	0	0	0	0	0	13
Terre Haute	68,939	0	5	0	0	0	0	0	0	19
Illinois:										
Chicago	2,886,121	2	0	0	50	4	31	1	104	723
Cicero	55,968	0	0	0	0	0	0	0	3	6
Springfield	61,833	1	0	0	1	0	2	0	0	16
Michigan:										
Detroit	995,668	3	0	0	12	2	6	1	19	217
Flint	117,968	1	0	0	0	1	0	0	0	14
Grand Rapids	145,947	1	0	0	2	0	2	1	7	41
Wisconsin:										
Madison	42,519	1	0	------	------	0	0	------	9	5
Milwaukee	484,595	2	0	0	9	0	1	0	21	96
Racine	64,393	1	1	0	0	0	1	0	0	7
Superior	[1] 39,671	1	0	0	0	0	0	0	0	5
WEST NORTH CENTRAL										
Minnesota:										
Duluth	106,289	1	0	0	0	1	1	0	0	16
Minneapolis	409,125	7	65	25	7	1	0	0	0	99
St. Paul	241,891	13	10	0	2	0	1	0	21	57

[1] Population Jan. 1, 1920.

[2] Pulmonary only.

City reports for week ended December 20, 1924—Continued

Division, State, and city	Population July 1, 1923, estimated	Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
		Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—contd.										
Iowa:										
Davenport	61,262	1	1			0	0		4	
Des Moines	140,923	1	3			0	0		0	
Sioux City	79,662	1	0			0	0		0	
Waterloo	39,667	0	5			0	0			
Missouri:										
Kansas City	351,819	2	0	0	1	0	2	0	0	93
St. Joseph	78,232	1	0	0	1	0	0	0	0	25
St. Louis	803,853	1	11	0	9	2	3	0	1	195
North Dakota:										
Fargo	24,841	0	0	0	0	0	0	0	0	4
Grand Forks	14,547	0	0			0	0		0	
South Dakota:										
Aberdeen	15,820		0				0		0	
Sioux Falls	29,206	1	0	0	0	0	0	0	0	5
Nebraska:										
Lincoln	58,671	1	0	0	0	0	0	0	1	8
Omaha	204,382	3	10	0	3	0	0	0	0	40
Kansas:										
Topeka	52,555	0				0				
Wichita	79,261	1	0	0	0	0	0	0	3	17
SOUTH ATLANTIC										
Delaware:										
Wilmington	117,728	0	0	0	0	1	0	0	0	20
Maryland:										
Baltimore	773,580	0	0	0	14	3	3	1	57	247
Cumberland	32,361	0	0	0	0	0	0	0		9
Frederick	11,301	0	0	0	0	0	0	0	0	4
District of Columbia:										
Washington	[1] 437,571	1	0	0	11	2	6	0	17	138
Virginia:										
Lynchburg	30,277	0	0	0	1	0	0	0	1	7
Norfolk	159,089	1	0	0	1	0	0	0	8	
Richmond	181,044	0	0	0	4	1	2	0	1	53
Roanoke	55,502	0	0	0	2	0	1	1	0	14
West Virginia:										
Charleston	45,597	0	7	0	0	0	0	0	1	14
Huntington	57,918	1	4			1	0		0	
Wheeling	[1] 56,208	0	0	0	1	0	1	0	1	19
North Carolina:										
Raleigh	29,171	0				0				
Wilmington	35,719	0	0	0	1	1	0	0	1	8
Winston-Salem	56,230	1				0				
South Carolina:										
Charleston	71,245	1	0	0	3	0	0	0	0	18
Columbia	39,688	0	0	0	1	0	0	0	1	28
Greenville	25,789	1	0	0	0	0	0	0	0	7
Georgia:										
Atlanta	222,963	2	0	0	2	1	0	0	1	70
Brunswick	15,937	0	0	0	0	0	0	0	0	7
Savannah	89,448	1	0	0	2	1	1	1	0	32
Florida:										
St. Petersburg	24,403	0	0	0	0	1	0	0	0	13
Tampa	56,050	0	0	0	0	0	1	0	0	15
EAST SOUTH CENTRAL										
Kentucky:										
Covington	57,877	0	0	0	0	0	0	0	0	17
Lexington	43,673	0	0	0	1	1	0	0	0	12
Louisville	257,671	1	0	0	3	0	1	0	0	61
Tennessee:										
Memphis	170,067	0	0	0	7	0	6	2	5	93
Nashville	121,128	0	0	0	1	0	0	0	0	44
Alabama:										
Birmingham	195,901	0	51	0	5	1	1	0	1	87
Mobile	63,858	1	0	0	5	0	1	0	0	25
Montgomery	45,383	0	4	0	0	0	0	0	0	[illegible]

[1] Population Jan. 1, 1920.

City reports for week ended December 20, 1924—Continued

Division, State, and city	Population July 1, 1923, estimated	Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
		Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL										
Arkansas:										
Fort Smith	30,635	0	1	------	------	0	0	------	0	------
Little Rock	70,916	0	2	0	1	0	0	2	0	------
Louisiana:										
New Orleans	404,575	1	0	0	14	1	11	1	4	141
Shreveport	54,590	------	0	0	2	------	0	0	0	38
Oklahoma:										
Oklahoma	101,150	2	0	0	0	0	0	0	0	26
Texas:										
Dallas	177,274	0	1	0	6	1	0	0	0	53
Galveston	46,877	0	0	0	0	0	1	0	0	12
Houston	154,970	1	7	0	5	1	0	0	0	52
San Antonio	184,727	0	0	0	12	0	0	0	0	64
MOUNTAIN										
Montana:										
Billings	16,927	0	0	0	0	0	0	0	6	4
Great Falls	27,787	0	0	0	0	1	0	0	0	11
Helena	[1] 12,037	0	0	0	0	0	0	0	------	10
Missoula	[1] 12,668	1	0	0	0	1	0	0	------	4
Idaho:										
Boise	22,806	1	3	0	0	0	0	0	0	6
Colorado:										
Denver	272,031	5	0	0	7	0	0	0	8	73
Pueblo	43,519	0	0	0	0	0	0	0	0	15
New Mexico:										
Albuquerque	16,648	0	0	0	2	0	1	1	0	4
Utah:										
Salt Lake City	126,241	3	0	0	3	0	1	0	1	29
Nevada:										
Reno	12,429	0	0	0	0	0	0	0	0	1
PACIFIC										
Washington:										
Seattle	[1] 315,685	1	16	------	------	0	0	------	5	------
Spokane	104,573	9	0	------	------	0	2	------	1	------
Tacoma	101,731	1	1	0	0	0	0	0	0	20
Oregon:										
Portland	273,621	7	8	0	3	0	1	0	4	------
California:										
Los Angeles	666,853	1	------	------	------	2	------	------	------	------
Sacramento	69,950	0	------	------	------	0	------	------	------	------
San Francisco	539,038	1	2	0	13	1	1	0	19	155

[1] Population Jan. 1, 1920.

City reports for week ended December 20, 1924—Continued.

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, est. expectancy	Cases	Deaths	Cases	Deaths
NEW ENGLAND											
Massachusetts:											
Boston	0	0	1	0	0	0	0	0	0	0	0
Springfield	0	0	1	0	0	0	0	0	0	0	0
Connecticut:											
New Haven	0	1	0	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC											
New York:											
New York	2	4	18	8	0	0	1	1	2	1	0
Pennsylvania:											
Philadelphia	2	1	1	1	0	0	0	0	0	0	0
EAST SOUTH CENTRAL											
Ohio:											
Cincinnati	0	1	0	1	0	0	0	0	0	0	0
Toledo	0	0	0	1	0	0	0	0	0	0	0
Illinois											
Chicago	0	0	5	0	0	0	0	0	0	0	0
Cicero	1	0	0	0	0	0	0	0	0	0	0
Michigan											
Detroit	0	1	3	0	0	0	0	0	0	0	0
Wisconsin:											
Milwaukee	0	0	3	2	0	0	0	0	0	0	0
WEST NORTH CENTRAL											
Minnesota:											
Duluth	0	0	0	1	0	0	0	0	0	0	0
Missouri.											
Kansas City	0	1	2	1	0	0	0	0	0	0	0
St. Louis	1	0	0	0	0	0	0	0	0	0	0
SOUTH ATLANTIC											
Virginia:											
Richmond	0	0	0	1	1	0	0	0	0	0	0
South Carolina:											
Columbia	0	0	0	0	0	1	0	0	0	0	0
EAST SOUTH CENTRAL											
Alabama:											
Birmingham	0	0	0	1	1	0	0	0	0	0	0
Mobile	0	0	0	0	0	1	0	0	0	0	0
WEST SOUTH CENTRAL											
Arkansas:											
Little Rock	0	1	0	0	0	0	0	0	0	0	0
Texas:											
Galveston	0	0	0	0	0	1	0	0	0	0	0
MOUNTAIN											
Montana:											
Helena	0	1	0	0	0	0	0	0	0	0	0
PACIFIC											
Washington:											
Tacoma	0	0	0	0	0	0	0	1	1	0	0
Oregon:											
Portland	1	0	0	0	0	0	0	0	0	0	0
California:											
San Francisco	0	0	0	0	0	0	0	1	0	0	0

The following table gives a summary of the reports from 105 cities for the 10-week period ended December 20, 1924. The cities included in this table are those whose reports have been published for all 10 weeks in the Public Health Reports. Eight of these cities did not report deaths. The aggregate population of the cities reporting cases was estimated at nearly 29,000,000 on July 1, 1923, which is the latest date for which estimates are available. The cities reporting deaths had more than 28,000,000 population on that date. The number of cities included in each group and the aggregate population are shown in a separate table below.

Summary of weekly reports from cities, October 12 to December 20, 1924

DIPHTHERIA CASES

	1924, week ended—									
	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20
Total	936	988	965	1,128	1,112	1,115	970	1,058	1,063	1,102
New England	82	89	88	78	82	84	67	104	[1] 77	89
Middle Atlantic	259	228	235	304	312	314	284	336	345	379
East North Central	176	176	211	279	247	227	234	223	225	[2] 248
West North Central	136	149	127	128	147	160	148	149	128	[3] 143
South Atlantic	121	172	131	148	109	129	128	[4] 89	99	[5] 72
East South Central	42	41	27	35	26	32	21	[6] 21	17	26
West South Central	28	36	40	46	59	45	27	31	45	42
Mountain	18	23	28	38	36	27	17	[7] 18	33	26
Pacific	74	74	78	72	94	97	44	87	94	[8] 86

MEASLES CASES

	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20
Total	193	197	241	310	322	400	364	613	706	779
New England	25	28	32	36	41	49	59	66	[1] 104	78
Middle Atlantic	97	92	112	144	135	154	156	207	238	227
East North Central	42	55	70	91	102	131	114	269	279	[2] 428
West North Central	7	3	7	7	10	14	5	12	17	[3] 9
South Atlantic	4	2	6	13	4	11	7	[4] 10	19	[5] 11
East South Central	1	0	0	2	2	2	0	[6] 0	1	2
West South Central	2	1	0	1	1	1	2	0	0	4
Mountain	5	2	3	2	4	4	3	[7] 2	5	6
Pacific	10	14	11	14	23	34	18	47	43	[8] 14

SCARLET FEVER CASES

	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20
Total	795	938	1,021	1,153	1,097	1,238	1,283	1,488	1,735	1,722
New England	99	121	96	114	135	155	176	219	[1] 235	222
Middle Atlantic	168	213	298	354	330	365	389	389	513	529
East North Central	176	214	256	270	262	303	307	346	415	[2] 415
West North Central	227	253	216	225	220	228	245	297	302	[3] 290
South Atlantic	48	57	57	67	58	72	63	[4] 83	124	[5] 106
East South Central	11	14	24	29	14	17	10	[6] 28	19	42
West South Central	16	17	15	25	18	14	20	27	35	40
Mountain	19	13	19	19	20	24	15	[7] 31	17	25
Pacific	31	36	40	50	40	60	58	68	75	[8] 53

[1] Figures for Worcester, Mass., estimated. Reports not received at time of going to press.
[2] Figures for Fort Wayne, Ind., estimated.
[3] Figures for Topeka, Kans., estimated.
[4] Figures for Norfolk, Va., estimated.
[5] Figures for Raleigh and Winston-Salem, N. C., estimated.
[6] Figures for Memphis, Tenn., estimated.
[7] Figures for Reno, Nev., estimated.
[8] Figures for Los Angeles and Sacramento, Calif., estimated.

Summary of weekly reports from cities, October 12 to Decemcer 20, 1124—Con.

SMALLPOX CASES

	1924, week ended—									
	Oct. 18	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20
Total	99	134	134	138	192	188	213	319	236	248
New England	0	0	0	0	0	0	0	0	[1] 0	0
Middle Atlantic	0	5	2	4	0	5	9	9	1	3
East North Central	30	19	16	6	11	14	19	13	18	[2] 20
West North Central	27	64	70	82	100	85	114	201	123	[3] 101
South Atlantic	0	3	1	3	7	6	3	[4] 22	19	[5] 8
East South Central	15	11	9	8	12	21	13	[6] 29	31	55
West South Central	3	2	2	2	8	6	7	4	3	11
Mountain	2	3	0	1	7	2	1	[7] 2	2	3
Pacific	22	27	34	32	47	49	47	39	39	[8] 47

TYPHOID FEVER CASES

Total	159	136	106	124	107	133	161	255	237	307
New England	8	6	5	7	5	5	9	12	[1] 6	12
Middle Atlantic	47	40	35	23	33	46	90	140	134	199
East North Central	17	14	11	14	11	15	10	30	43	[2] 45
West North Central	11	5	9	9	3	8	2	4	8	[3] 7
South Atlantic	20	22	13	21	10	14	15	[4] 27	17	[5] 15
East South Central	12	21	12	14	20	14	19	[6] 18	10	9
West South Central	12	12	6	18	11	13	8	13	11	12
Mountain	23	10	5	9	8	2	2	[7] 1	2	1
Pacific	9	6	10	9	6	16	6	10	6	[8] 7

INFLUENZA DEATHS

Total	20	18	35	38	43	41	56	63	91	84
New England	1	1	1	5	0	2	2	7	[1] 2	6
Middle Atlantic	11	9	21	23	17	17	15	21	43	33
East North Central	3	5	5	5	5	7	15	13	18	[2] 12
West North Central	2	0	0	0	0	0	3	2	2	[3] 4
South Atlantic	1	2	3	3	4	6	7	[4] 5	11	[5] 11
East South Central	1	0	1	1	4	2	5	[6] 4	4	4
West South Central	1	0	3	1	7	3	5	6	7	8
Mountain	0	0	0	0	1	4	2	[7] 3	3	5
Pacific	0	1	1	0	5	0	2	2	1	[8] 1

PNEUMONIA DEATHS

Total	497	479	593	636	676	646	701	832	863	917
New England	28	27	42	33	35	38	58	51	[1] 45	54
Middle Atlantic	221	227	270	305	294	301	300	371	397	377
East North Central	90	77	95	109	116	122	126	155	168	[2] 195
West North Central	23	20	28	29	32	36	34	29	40	[3] 29
South Atlantic	50	65	87	75	83	57	83	[4] 91	86	[5] 120
East South Central	19	13	21	24	46	36	43	[6] 39	38	52
West South Central	16	17	21	22	34	20	21	32	35	32
Mountain	22	16	6	8	10	15	13	[7] 23	21	29
Pacific	28	17	23	31	26	21	23	41	33	[8] 29

[1] Figures for Worcester, Mass., estimated. Reports not received at time of going to press.
[2] Figures for Fort Wayne, Ind., estimated.
[3] Figures for Topeka, Kans., estimated.
[4] Figures for Norfolk, Va., estimated.
[5] Figures for Raleigh and Winston-Salem, N. C., estimated.
[6] Figures for Memphis, Tenn., estimated.
[7] Figures for Reno, Nev., estimated.
[8] Figures for Los Angeles and Sacramento, Calif., estimated.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

BOLIVIA

Smallpox—Typhus Fever—La Paz—November, 1924

During the month of November, 1924, 12 cases of smallpox with 7 deaths, and 2 cases of typhus fever were reported at La Paz, Bolivia. Total mortality from all causes, 241. Population, estimated, 100,000.

ECUADOR

Mortality—Communicable Diseases—Quito—November, 1924

During the month of November, 1924, 121 deaths from all causes were reported at Quito, Ecuador, including dysentery, 9 deaths; malaria, 1 death; typhoid fever, 1; tuberculosis, 8; whooping cough, 5. Deaths of infants under 1 year of age, 34.

Plague, Smallpox—Guayaquil—November 16–30, 1924

During the period November 16 to 30, 1924, 2 cases of smallpox and 6 cases of plague were reported at Guayaquil, Ecuador. During the same period 8,802 rats were reported taken at Guayaquil, and 19 rats were found infected.

ESTHONIA

Communicable Diseases—October, 1924

During the month of October, 1924, 43 cases of diphtheria, 23 of scarlet fever, 125 cases of typhoid fever, and 22 of paratyphoid fever were reported in the Republic of Esthonia. Estimated population, 1,107,059.

FINLAND

Communicable Diseases—November 16–30, 1924

During the period November 16 to 30, 1924, 72 cases of diphtheria, 2 of lethargic encephalitis, 86 of paratyphoid fever, and 20 of typhoid fever were reported in Finland. Estimated population, 3,402,593.

MADAGASCAR

Plague—October 16–31, 1924

During the period October 16 to 31, 1924, 36 cases of plague with 33 deaths were reported in the Province of Tananarive, Island of Madagascar.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended January 9, 1925[1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo	Nov. 16-22	1		
India				Oct. 26-Nov. 1, 1924: Cases, 2,653; deaths, 1,623.
Siam:				
Bangkok	Nov. 19-25	2		

PLAGUE

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo	Nov. 16-22	2	1	One plague rodent.
Ecuador:				
Guayaquil	Nov. 16-30	6	2	Rats taken: 8,802; found infected, 19.
Egypt				Jan. 1-Dec. 2, 1924: Cases, 361. Corresponding period, year 1923—cases, 1,448.
City—				
Alexandria	Dec. 1	1	1	Bubonic.
Port Said	Dec. 1	1	1	
Suez	Dec. 3	1	1	
India				Oct. 26-Nov. 1, 1924: Cases, 2,067; deaths, 1,990.
Rangoon	Oct. 26-Nov. 1	2	3	
Java:				
Cheribon	Oct. 14-20		10	
Pekalongan	do		5	
Tegal	do		3	
Madagascar				Oct. 16-31, 1924: Cases, 36; deaths, 33.
Tananarive Province	Oct. 16-31	36	33	
Tananarive Town	do	2	2	Bubonic.
Other localities	do	34	31	Bubonic, 15; pneumonic, 7; septicemic, 9.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Bolivia:				
La Paz	Nov. 1-30	12	7	
Canada:				
British Columbia—				
Vancouver	Dec. 14-20	11		
China:				
Amoy	Nov. 16-22			Present.
Antung	Nov. 17-23	1		
Ecuador:				
Guayaquil	Nov. 16-30	2		
Egypt:				
Alexandria	Nov. 12-18	1		
Gibraltar	Dec. 8-14	1		
India				Oct. 26-Nov. 1, 1924: Cases, 587; deaths, 173.
Bombay	Dec. 19-25	10	3	
Rangoon	Oct. 26-Nov. 1	12	2	
Java:				
East Java—				
Soerabaya	Oct. 26-Nov. 1	93	39	
West Java—				
Province—				
Bantam	Oct. 14-20	2		One locality.
Batavia	Nov. 8-14	1		
Cheribon	Oct. 14-20	2		Do.
Pekalongan	Oct. 14-20	12		Two localities.
Mexico:				
Mexico City	Nov. 23-29	1		
Vera Cruz	Dec. 6-13	2		
Spain:				
Cadiz	Nov. 1-30		34	
Malaga	Oct. 31-Nov. 13		40	
Tunis:				
Tunis	Dec. 2-15	19	15	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received During Week Ended January 9, 1925—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Bolivia:				
La Paz	Nov. 1-30	2		
Chile:				
Talcahuano	Nov. 16-20		4	10 cases (estimated) present Nov. 22.
Valparaiso	Nov. 25		1	
Mexico:				
Mexico City	Nov. 9-29	29		
Poland				Sept. 28-Oct. 4, 1924; Cases, 28; deaths, 1. Recurrent fever, cases, 4.
Turkey:				
Constantinople	Nov. 15-21	3		
Union of South Africa:				
East London	Nov. 16-22	1		

Reports Received from December 27, 1924, to January 2, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				October 19-25, 1924. Cases, 2,647; deaths, 1,596.
Calcutta	Oct. 26-Nov. 15	27	21	
Madras	Nov. 16-22	14	11	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Ponta Delgada	Dec. 6-12	9	5	
Ceylon:				
Colombo	Nov. 9-15	2	2	
India				Oct. 19-25, 1924: Cases, 2,593; deaths, 1,952.
Rangoon	Nov. 2-8	1	1	

SMALLPOX

Place	Date	Cases	Deaths	Remarks
British South Africa.				
Northern Rhodesia	Oct. 28-Nov. 3	24	2	In natives.
Canada				
Manitoba—				
Winnipeg	Dec. 7-13	4	0	
China:				
Amoy	Nov. 9-15			Present.
Foochow	Nov. 2-8			Do.
Great Britain:				
England and Wales	Nov. 23-Dec. 6	184	0	
India				Oct. 19-25, 1924: Cases, 838; deaths, 153.
Bombay	Nov 2-8	4	3	
Calcutta	Oct. 26-Nov. 15	53	34	
Karachi	Nov. 16-22	2	1	
Madras	do	10	4	
Rangoon	Nov. 2-8	5	2	
Iraq:				
Bagdad	Nov. 9-15	1	1	

[1] From medical officers of the Public Health Service, American consuls, and other sources. For reports received from June 28 to Dec. 26, 1924, see Public Health Reports for Dec. 26, 1924. The tables of epidemic diseases are terminated semiannually and new tables begun.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to January 2, 1925—Continued

SMALLPOX—Continued.

Place	Date	Cases	Deaths	Remarks
Java:				
East Java—				
Soerabaya	Oct. 19-25	119	32	
West Java				Oct. 26-Nov. 7, 1924: Cases 2.
Mexico:				
Vera Cruz	Dec. 1-14	0	6	
Spain:				
Valencia	Nov. 30-Dec. 6	2	0	
Syria:				
Aleppo	Nov. 23-29	1	0	
Tunis:				
Tunis	Nov. 25-Dec 1	14	8	
Union of South Africa:				
Orange Free State	Nov. 2-8			Outbreaks.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Egypt:				
Cairo	Oct. 1-14	3	2	
Palestine	Nov. 12-24	3		

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TREASURY DEPARTMENT

PUBLIC HEALTH REPORTS

ISSUED WEEKLY

BY THE UNITED STATES PUBLIC HEALTH SERVICE

VOLUME 40 :: :: NUMBER 3

JANUARY 16 - - 1925

SPECIAL ARTICLES

Proportion of the Sexes of Anopheles Found in Various Resting Places

Reports of the Health Section of the League of Nations

WASHINGTON
GOVERNMENT PRINTIN
1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

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PUBLIC HEALTH REPORTS

VOL. 40 **JANUARY 16, 1925** **No. 3**

THE SIGNIFICANCE OF THE PROPORTION OF SEXES FOUND AMONG ANOPHELES IN VARIOUS RESTING PLACES

By M A. BARBER, Special Expert; W H. W. KOMP, Associate Sanitary Engineer; and T. B. HAYNE, Technical Assistant, United States Public Health Service

There is a more or less general impression among field workers in malaria that the presence of a large proportion of males among *Anopheles* in a daytime resting place indicates nearness to a breeding place. If such should be the case, we would have in the proportion of sexes a valuable indicator of the location of breeding places and their nearness to dwellings. For the past four years we have been accustomed to keep a record in our notes of the proportion of sexes and of the character of the resting places of *Anopheles* collected in a considerable variety of localities. Most of these collections were made in connection with studies in mosquito distribution and dispersal; but some of the more recent observations were made for the definite purpose of determining the significance of the proportion of sexes as regards the character of a resting place and its distance from a breeding place. It has seemed worth while to summarize our observations, and this is done in the accompanying tables.

In Table 1, which includes only *Anopheles quadrimaculatus*, our observations are classified according to the proportion of males found in each collection, and according to the type of resting place, regardless of its distance from the probable breeding place. In each observation the insects collected were identified in the laboratory. Since the sex percentages are calculated for each observation, the numbers included in them are of importance. No observation includes less than 10 *Anopheles*. Of the 300 observations contained in Table 1, 28.7 per cent include 10-24 *Anopheles;* 21.7 per cent, 25-50 *Anopheles;* 23.0 per cent, 51-100; 21.7 per cent, 101-500; and 6 per cent, over 500. In a general way, the different types of resting places are arranged in Table 1 according to the degree of accessibility, to the mosquitoes, of a source of blood.

The distribution of the observations in Table 1 indicates rather decisively that the more accessible the source of blood in a shelter the smaller the percentage of male *Anopheles quadrimaculatus* in it. In the seventh column under the heading "Resting places" are in-

cluded such places as hollow stumps and trees, spaces under bridges, empty buildings, and similar places not accessible to domestic animals. In such places the proportion of females containing blood as well as of females in general was relatively small. As regards the category "under human dwellings," nearly all of our collections were made under well-screened houses; and our series may show a smaller percentage of females than would a series including many of the poorer sort of dwellings.

TABLE 1.—*Observations on Anopheles quadrimaculatus arranged according to the percentage of males in each observation and the character of the resting places*

Per cent males	Resting places and incidence of observations							Total, all resting places
	Barns known to house animals at night	Barns probably housing animals at night	In human dwellings	Under human dwellings	Chicken houses	Privies	Shelters with no convenient source of blood	
81-90							1	1
76-80							2	2
71-75							1	1
66-70							1	1
61-65				1			4	5
56-60				1			3	4
51-55						2	10	12
46-50	1					2	5	8
41-45	2	1		2	1	5	5	16
36-40	2		1	1		1	8	13
31-35	3			4	3	5	3	18
26-30	2	2		2	2	2	8	18
21-25	2	3		3		4	2	14
16-20	6	10	1	3	1	2	2	25
11-15	12	12	6	1	4	1	4	40
6-10	17	12	3		2		3	37
0-5	34	36	3	1	7	1	3	85
Number of observations	81	76	14	19	20	25	65	300
Number of mosquitoes	14,013	3,852	1,074	944	4,963	6,534	3,191	34,571
Average number of mosquitoes per observation	173.0	50.7	76.7	49.4	248.1	261.3	49.0	115.2
Per cent males in each group	6.7	13.1	11.2	28.1	17.8	31.2	46.0	-------

In Table 2 *Anopheles quadrimaculatus* and *Anopheles crucians* are compared as regards the proportion of males found in different resting places. The total number of observations is less than that of Table 1, since only those observations are included in which both species occurred in the same resting place at the same observation. In our series the number of *Anopheles crucians* per observation was usually smaller than that of *Anopheles quadrimaculatus*. It also appears from Table 2 that the proportion of males of *Anopheles crucians* was generally smaller than that of *Anopheles quadrimaculatus*, and that this discrepancy was especially marked in occupied barns, where males of *Anopheles crucians* were found in only 3 out of 95 collections (total, 6 males to 548 females, or 1 male to 91 females); whereas in the case of *Anopheles quadrimaculatus* males occurred in 59 out of 95

collections (total, 699 males to 10,563 females, or 1 male to 15 females). No explanation occurs to us for the fewness of males of *Anopheles crucians* in blood-providing resting places, unless possibly *Anopheles crucians* is a comparatively "wild" species, and only females strongly attracted by blood seek resting places commonly frequented by the more domesticated *Anopheles quadrimaculatus*. Our observations were made almost wholly in fresh-water regions. Along the coast, where *Anopheles crucians* are often aggressive biters, different proportions of species and sexes might occur in resting places.

TABLE 2.—*Observations on Anopheles according to the percentage of males in each observation and the character of the resting place.—A. crucians and A. quadrimaculatus compared*

Per cent males	Resting places and incidence of observations											
	Barns known to house animals at night		Barns probably housing animals at night		In human dwellings		Chicken houses		Under human dwellings		Shelters with no convenient source of blood	
	Quad	Crucians	Quad	Crucians	Quad	Crucians	Quad	Crucians	Quad	Crucians	Quad	Crucians
50-100				2					3	3	16	8
41-50	2		2	3		1			2	1	3	1
31-40	6	2		2			2		3	1	10	10
21-30	7		8	2	1		1		3	3	4	4
16-20	9		7	1					1		3	2
10-15	13		14	2	4		1		2	2	2	4
8-9	4		3				1				1	
6-7	9		5	1							2	1
4-5	12	1	7	2							1	
2-3	9		7	2	1							
1	13			5								
0	11	92	21	52	1	6		5			5	17
Number of observations	95	95	74	74	7	7	5	5	15	15	47	47
Number of mosquitoes	11,262	554	3,556	2,909	420	16	921	18	822	554	1,287	554

Total number of observations	243
Total number of mosquitoes	21,873
Total *A. quadrimaculatus*	17,268
Total *A. crucians*	4,605

In addition to the data given in Tables 1 and 2, certain special observations also indicate the relation between the character of a shelter and the proportion of sexes found in it.

In the course of some tests comparing man with domestic animals as an attraction for *Anopheles*,[1] man-baited and pig-baited traps and a control trap with no animal bait were arranged at points equidistant from an *Anopheles'* breeding place. The average of four nights' observations gives a female percentage of from 92 to 100 per cent for both *Anopheles quadrimaculatus* and *Anopheles crucians* in the traps which had a source of blood, while the control trap gave only 50 to 54 per cent of females.

[1] Barber, M. A., and Hayne, T. B.: Public Health Reports, Vol 39, No. 4, 1924, pp 139-144

A series of 5 daily observations were made in a barn which housed horses at night. The percentage of males ranged from 6.0 to 11.4 per cent on different days, and averaged 8.5 per cent. Later in the season this barn was converted into a chicken house, while remaining at the same distance from a breeding place—an irrigated rice field. As a chicken house the building apparently afforded less attraction for female *Anopheles;* for a series of six daily observations, made only three weeks after the first series, showed a male percentage which varied on different days from 13.1 to 29.6 per cent, and averaged 21.4 per cent.

The preponderance of females in blood-providing resting places is, of course, due to the fact that only females seek blood, and, once becoming engorged, they tend to remain during the following day in the shelter most convenient to the source of blood. During the warm months of the year and in localities where there is an abundance of shelters, there would not seem to be any other reason for their preference for occupied barns or dwellings. Probably the "wilder" the species, the less likely that females would remain in barns or dwellings after biting. It would be worth while to compare different species of *Anopheles* to determine whether the proportion of males found in blood-providing resting places is any indicator of the degree of domestication of a species.

In our series the numbers of *Anopheles punctipennis* were too small to be of much significance.

TABLE 3.—*Observations on A. quadrimaculatus arranged according to the percentage of males, the character of the resting places, and their distance from a breeding place*

Resting place and distance from a breeding place	Percentage of males and incidence of observations														
	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75
Shelters with no convenient source of blood:															
0-100 yards			1		1	3		3	4		1	1			
101-220 yards								1		1	1		1		1
440 yards		1								1			1		
In human dwellings															
0-100 yards	1		4					1							
101-220 yards	1	3	1	1											
440 yards			1												
Barns known to house animals at night															
0-100 yards	14	7	3	2											
101-220 yards	10	3			1										
440 yards	4	1	2	1	1		1	1	1						
880 yards	2		2	1	1	1	1			1					
1,000 yards	3		1	1			1								
¾-mile				1											
1,200 yards	3	2	3	1											
1 mile or more				1			1	1		1					

In Table 3 observations are arranged according to percentage of males and distance from the probable breeding place. This table includes all the observations appearing in Table 1 in which the dis-

tance from a probable breeding place was known. Data for certain types of shelters are omitted either because of too few observations or because of too little variety in distance from a breeding place. In the case of privies, nearly all of the observations were made in places within 150 yards of a breeding place. The percentage of males in the different collections made at that distance was practically that shown in Table 1 for all distances. Practically the same statement can be made for our comparatively few observations made under occupied dwellings. Considering the three types of resting places included in Table 3, in barns housing animals the percentage of males shows a tendency to increase with increased distance, especially when we compare distances up to 220 yards with those of 440 and 880 yards. At 1,200 yards, however, evidence of such correlation ceases; and there is certainly no constant tendency in any category for the proportion of either sex to increase with distance. In human dwellings and in shelters not providing a source of blood, the number of observations is small, and these groups are included in order to show the great variety in the percentage of males found at a given distance. Repeated observations made in a certain occupied cabin situated within 150 yards of an irrigated rice field gave during the same season, percentages of male *Anopheles quadrimaculatus* varying from 2.5 to 16.3 per cent.

It is not always easy to determine the breeding place which most largely contributes to the population of a given shelter. In our observations, mostly made in an irrigated, rice-growing district, determinations were made easier during two seasons by droughts which eliminated nearly all breeding places except those in irrigated fields. In any case, the distances taken as a whole were determined definitely enough to bring out any marked correlation, should any exist, between sex proportions and distance.

All of the observations included in Tables 1, 2, and 3 were made during the warm months of the year, when the proportion of females was not affected by winter conditions. A series of observations carried on during several winters would indicate that in winter as well as in summer, females are especially attracted to shelters containing a source of blood. Pig traps would contain females almost exclusively, while many males could be found in the near-by woods (Georgia, January and February, 1921). As we have stated in a previous paper,[2] winter breeding of *Anopheles* may be going on, although very few or no males can be found in blood-providing resting places.

[2] Barber, M. A., Komp, W. H. W., and Hayne, T. B.: Public Health reports 3, vol. 39, No. 6, 1924, pp. 231-246.

SUMMARY

Our observations show clearly that the character of a resting place of *Anopheles* is an important factor in determining the proportion of the sexes found in it—the more accessible the source of blood, the larger the percentage of females—and this factor seems to be more important in the case of *Anopheles crucians* than in the case of *Anopheles quadrimaculatus*. Distance from a breeding place would seem to be a minor factor in our series, even if it operated at all.

It is to be kept in mind that the habits of *Anopheles* may show great variations according to locality; and it may be that under certain conditions the proportion of sexes would be a more reliable indicator of distance from a breeding place than it appears to be in our series. In a large proportion of our observations where the distance from a breeding place is recorded, the breeding was taking place in irrigated rice fields. It may be that in the case of a more restricted breeding area the proportion of the sexes would show some relationship to distance. Absence of any but blood-providing shelters might also increase the proportion of males in them. In any case, in determining the relation of distance from breeding place to the proportion of sexes found, the character of the resting place must be taken into consideration; and in view of the results of our observations it does not seem likely that a correlation of sex proportion and distance from a breeding place will be found sufficiently definite and universal to be a reliable guide to field workers.

CURRENT WORLD PREVALENCE OF DISEASE

REVIEW OF THE MONTHLY EPIDEMIOLOGICAL REPORT FOR NOVEMBER 15, 1924, ISSUED BY THE HEALTH SECTION OF THE LEAGUE OF NATIONS' SECRETARIAT

By Dorothy Wiehl, Assistant Statistician, United States Public Health Service

The feature of the Monthly Epidemiological Report of the Health Section of the League of Nations for November 15, 1924, is an account of the epidemic in Japan of a "hitherto unidentified epidemic disease involving the central nervous system," an advance statement of which was reviewed in the Public Health Report for December 12, 1924, pages 3125–3129. Of interest in relation to this epidemic in Japan is a short survey of the present situation of the epidemic diseases of the central nervous system and of influenza presented in the Report for as many countries as possible.

Lethargic encephalitis.—"Lethargic encephalitis has been unusually prevalent in 1924 only in Great Britain and Ireland; smaller outbreaks have occurred in Italy and Sweden, but the disease has been less prevalent than during the previous years elsewhere in the European continent and in North America," states the Report. The

following summarization of notifications of lethargic encephalitis in European countries during 1923 and 1924 is taken from the Monthly Epidemiological Report:

Cases of lethargic encephalitis notified in various countries, 1923-1924

Four weeks ended—	England and Wales		Scotland (16 cities)		North Ireland (Belfast)		Switzerland		Italy	
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924
Jan. 26	66	56	-------	3	0	1	52	2	15	28
Feb. 23	151	150	-------	2	2	1	68	11	35	52
Mar. 22	184	397	-------	5	2	0	41	12	70	150
Apr. 19	145	806	-------	8	5	1	7	14	45	151
May 17	96	1,066	13	95	2	124	9	17	27	72
June 14	73	862	11	232	2	71	5	8	15	37
July 12	54	477	4	144	3	13	3	5	8	18
Aug. 9	29	266	6	46	0	4	2	7	6	21
Sept 6	36	236	10	33	2	5	3	0	4	13
Oct. 4	52	187	3	20	1	0	0	4	7	15
Nov. 1	50	170	2	10	1	1	4	0	15	-------
Nov. 29	53	-------	1	-------	0	-------	5	-------	15	-------
Dec. 27	49	-	3	-------	0	---	4	-------	15	-------
Total	1,038	-------	-------	-------	20	-------	203	-------	277	-------

Month	Sweden		Denmark		Finland		Czechoslovakia		Lithuania	
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924
January	102	32	12	3	22	3	70	2	0	0
February	154	63	23	4	29	5	100	9	12	0
March	93	43	21	10	12	6	85	22	30	4
April	39	25	7	14	6	6	44	25	21	3
May	22	19	5	17	1	3	14	8	9	0
June	19	11	2	8	1	3	18	5	0	0
July	25	14	5	6	1	1	6	8	0	0
August	17	22	3	7	2	2	5	0	0	0
September	16	21	2	5	1	2	3	0	0	0
October	16	-------	6	-------	2	-------	6	-------	0	-------
November	13	-------	3	-------	2	-------	4	-------	0	-------
December	20	-------	2	-------	4	-------	11	-------	0	-------
Total	536	-------	-------	-------	83	-------	366	-------	72	-------

This year's epidemic of lethargic encephalitis in Great Britain and Ireland, though "the most severe on record" from the point of view of its incidence, has been less fatal than former outbreaks; "the case fatality rarely exceeded 20 per cent, while in former outbreaks it has been nearly 50 per cent." Another difference pointed out is that the oculo-lethargic type was less common than in the earlier epidemics, and many cases were characterized by myoclonic symptoms. The accompanying graph reproduced from the Monthly Epidemiological Report shows the severity of the recent epidemic and the higher level of incidence still being maintained.

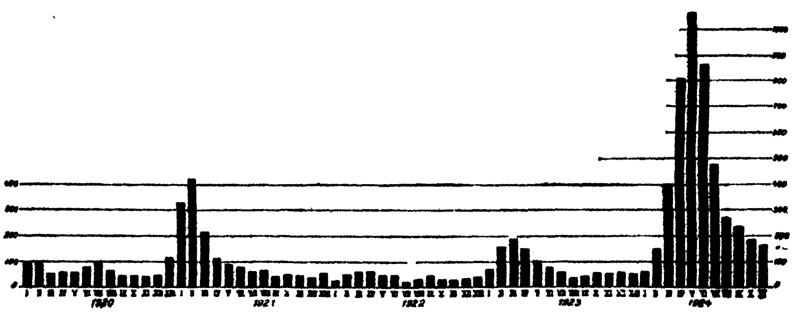
Acute poliomyelitis.—In the area where acute poliomyelitis is usually most prevalent, namely, in Scandinavia, Great Britain, and the United States, "although more cases have been notified than during the previous two years, the outbreaks have been far milder than the epidemics of 1911, 1912, and 1916." The severe outbreak

of poliomyelitis in Iceland, previously referred to in these reports, showed an incidence of about 2 cases per 1,000 population and a case fatality of 37 per cent, counting only the cases showing definite paralysis.

Epidemic cerebrospinal meningitis.—"Cerebrospinal meningitis has, in general, been less prevalent in 1924 than during the preceding years. Major outbreaks have been reported only from certain localities in Africa (Nigeria) and from Japan, where the above-mentioned epidemic appears to have been accompanied by a considerable number of true meningococcal meningitis" states the Report.

Influenza.—Although slight increases in influenza were indicated for a few countries, at the time when the Report went to press nothing unusual in the trend of the disease was suggested.

CASES OF LETHARGIC ENCEPHALITIS NOTIFIED IN ENGLAND AND WALES, JAN. 1920, TO OCT. 1924, BY PERIODS OF FOUR WEEKS



Plague.—A serious epidemic of plague is reported from Nigeria, and the latest reports showed the number of cases still to be increasing. The first case is said to have occurred in July, followed by sporadic cases in August. The figures for September and October follow:

Cases of plague notified in Nigeria

Week ended—	Cases	Deaths
September 8	6	6
15	30	29
22	63	62
29	104	93
October 6	150	135
13	204	172

The plague situation in general continues relatively favorable. In the Far East, India showed a slight increase in August over July, the month of the "annual minimum incidence." In Java the number of deaths from plague has increased steadily since June; 584 deaths were reported in the two weeks from September 9–22. In Hongkong, states the Report, "no case of plague has occurred for a whole

year, a circumstance which is unique in at least 20 years' experience." An account of the plague outbreak in California has already appeared in the Public Health Reports.

Cholera.—The second wave of cholera in India this year, which started toward the end of July, appears to have culminated in August. The decline was most marked in the Province of Bihar and Orissa, where 455 deaths from cholera were reported during the week September 21–27, as compared with 3,341 in the week August 3–9. Outside of India, cholera notifications in Asia were limited to sporadic cases.

Smallpox.—"The smallpox situation remains favorable in the greater part of Europe" states the Report. In Spain the number of deaths from smallpox has been increasing since May; 127 deaths were reported in August as compared with 75 in July and 38 in June.

The rapid decline of the smallpox incidence in the United States continued into August, but an increase in notifications is noted in September.

The largest increase in smallpox is indicated for Java, where 900 cases were reported for the 4 weeks ended September 6 as against 490 in the previous 4 weeks ended August 9.

Enteric fever and dysentery.—The usual autumn increase in enteric fever is found in the reports of most countries. The excess incidence in the Baltic region, which was noticeable during August, became more marked in September.

Dysentery has been prevalent chiefly in the countries of central and eastern Europe, and is relatively rare in western and northern Europe. It has been more prevalent in Poland this year than in 1923, but less so than in 1922. Germany, Czechoslovakia, and Italy show an improvement over last year.

Scarlet fever and diphtheria.—No serious epidemics of either scarlet fever or diphtheria were indicated in the September and October returns, though marked seasonal increases were shown for a number of countries.

Malaria.—Malaria incidence in Russia for the five months, January–May, 1924, is given for each of the official geographical regions of Russia in the Report and compared with the incidence for the same period in 1923. A shifting of the most intensely infected areas from the Volga towards the Don and the Dnieper is indicated.

DEATH RATES IN A GROUP OF INSURED PERSONS

COMPARISON OF PRINCIPAL CAUSES OF DEATH, OCTOBER AND NOVEMBER, 1924, AND NOVEMBER AND YEAR, 1923

The accompanying table is taken from the Statistical Bulletin for December, 1924, published by the Metropolitan Life Insurance Co., and presents the mortality experience of the industrial department

of the company for November, 1924, as compared with October, 1924, and November, 1923. The rates are based on a strength of approximately 15,000,000 insured persons.

The death rate for this group continued low in November. The Bulletin states:

The November death rate of 7.8 per 1,000 is the lowest ever recorded for that month among Metropolitan industrial policyholders.

The November record for every important cause of death is favorable, and particularly so for typhoid fever, for the principal epidemic diseases of childhood, tuberculosis, organic heart disease, pneumonia, and puerperal diseases. Among deaths due to violent causes, suicides, and automobile accidents showed increases both over October, 1924, and November of last year. There were also more homicides than in October, but there was a decline in the rate as compared with November, 1923. For all accidents combined, the rate decreased both from the October figure and from that for November of last year.

Death rates (annual basis) for principal causes per 100,000 lives exposed, October and November, 1924, and November and year, 1923

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Rate per 100,000 lives exposed [1]			
	November, 1924	October, 1924	November, 1923	Year 1923
Total, all causes	776.5	832.7	835.2	928.2
Typhoid fever	5.2	6.2	5.0	5.1
Measles	1.1	.8	2.3	9.5
Scarlet fever	3.6	1.7	3.5	4.4
Whooping cough	4.7	4.8	5.8	7.4
Diphtheria	13.5	11.0	17.6	15.5
Influenza	9.6	5.7	7.9	30.3
Tuberculosis (all forms)	81.2	90.6	88.9	110.1
Tuberculosis of respiratory system	71.7	80.4	80.9	99.7
Cancer	66.4	69.6	69.9	71.8
Diabetes mellitus	12.6	15.3	12.6	16.0
Cerebral hemorrhage	54.4	58.1	54.9	61.2
Organic diseases of heart	106.7	113.9	117.6	127.3
Pneumonia (all forms)	69.1	56.1	76.2	83.9
Other respiratory diseases	11.9	12.5	14.2	13.9
Diarrhea and enteritis	26.7	48.0	27.4	28.2
Bright's disease (chronic nephritis)	58.2	62.3	61.0	68.8
Puerperal state	12.1	14.7	14.0	17.7
Suicides	7.5	7.2	5.9	7.3
Homicides	7.7	7.3	8.9	7.3
Other external causes (excluding suicides and homicides)	58.1	61.4	59.6	62.9
Traumatism by automobile	17.0	16.9	16.5	15.3
All other causes	166.2	185.7	182.0	179.4

[1] All figures include infants insured under 1 year of age.

UNITED STATES CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following open competitive examinations:

PHYSIOTHERAPY AID—PHYSIOTHERAPY PUPIL AID—PHYSIOTHERAPY ASSISTANT

Examinations for the above-named positions will be held throughout the country on February 18, March 25, April 22, May 20, and June 24, 1925. They are to fill vacancies in the United States Veterans' Bureau and in the United States Public Health Service, at entrance salaries ranging from $720 to $1,320 a year.

The duties of physiotherapy aids will consist of administering physiotherapy in its several branches—massage, electrotherapy, hydrotherapy, mechanotherapy, thermotherapy; active, passive, resistive, and assistive exercises and remedial gymanstics; keeping daily record of the work and progress of each and every patient coming under direction and treatment; making the required reports of the activities of the reconstruction work in physiotherapy.

The duties of physiotherapy pupil aids will be the same as those for physiotherapy aid, except that they are pupils under the supervision and instruction of the chief aid in all the work above mentioned.

The duties of physiotherapy assistants will consist of administering to special cases the treatments of physiotherapy, as massage, electrotherapy, hydrotheraphy, thermotherapy, mechanotherapy; active, passive, assistive, and resistive exercises; remedial gymanstics; keeping a daily record of the work and progress of each patient under the appointee's direction and treatment; and making the required reports of the activities of the reconstruction work in physiotherapy.

GRADUATE NURSE—GRADUATE NURSE (VISITING DUTY)

Applications for graduate nurse and graduate nurse (visiting duty) will be rated as received until June 30, 1925. The examinations are to fill vacancies in the United States Veterans' Bureau and in the Indian and Public Health Services, at entrance salaries ranging from $1,020 to $1,680 a year.

Applicants for the position of graduate nurse must have been graduated at a recognized school of nursing requiring a residence of at least two years in a hospital having a daily average of 30 patients or more, giving a thorough practical and theoretical training, and must show evidence of State registration.

Applicants for the position of graduate nurse (visiting duty) must meet the requirements for graduate nurse, and in addition must have had at least four months' postgraduate training in public health or visiting nursing at a school of recognized standing, or in lieu of such training, one year's experience under supervision in public health or visiting nursing.

Competitors will not be required to report for examination at any place, but will be rated on their education, training, and experience.

DIETITIAN

Applications for dietitian will be rated as received until June 30, 1925. The examination is to fill vacancies in the Veterans' Bureau and the Public Health Service, at entrance salaries ranging from $1,020 to $1,680 a year.

The duties of the position are to purchase the food supplies for all messes operated in the hospital; to plan all menus, both for patients on ordinary diets and those on diets with reference to special diseases; and to supervise the preparation and serving of all dietaries in the hospital, both to patients and personnel.

Competitors will not be required to report for examination at any place, but will be rated on their education, training, and experience.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the board of United States civil-service examiners at the post office or customhouse in any city.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended January 10, 1925

ALABAMA

	Cases
Chicken pox	77
Diphtheria	38
Dysentery	2
Influenza	210
Malaria	15
Measles	11
Mumps	38
Pellagra	3
Pneumonia	135
Poliomyelitis	1
Scarlet fever	38
Smallpox	136
Tetanus	6
Tuberculosis	21
Typhoid fever	7
Whooping cough	14

ARIZONA

	Cases
Chicken pox	6
Diphtheria	2
Lethargic encephalitis	1
Measles	14
Mumps	19
Pneumonia	1
Scarlet fever	13
Smallpox	8
Tuberculosis	1

ARKANSAS

	Cases
Cerebrospinal meningitis	1
Chicken pox	27
Diphtheria	2
Hookworm disease	12
Influenza	151
Malaria	19
Measles	42
Mumps	31
Pellagra	2
Scarlet fever	13
Smallpox	11
Tuberculosis	7
Typhoid fever	14
Whooping cough	22

CALIFORNIA

	Cases
Diphtheria	141
Influenza	37
Lethargic encephalitis Los Angeles	1
Measles	32
Plague (bubonic)—Los Angeles	1
Poliomyelitis	
Los Angeles	2
Sacramento	1
Scarlet fever	158
Smallpox:	
Los Angeles	27
Los Angeles County	12
Oxnard	10
Scattering	59
Typhoid fever	19

COLORADO

(Exclusive of Denver)

	Cases
Chicken pox	46
Diphtheria	3
Measles	1
Mumps	34
Pneumonia	5
Scarlet fever	6
Smallpox	1
Tuberculosis	78
Whooping cough	7

CONNECTICUT

	Cases
Cerebrospinal meningitis	3
Chicken pox	121
Diphtheria	52
German measles	34
Influenza	3
Lethargic encephalitis	1
Measles	36
Mumps	42
Pneumonia (all forms)	114
Poliomyelitis	1
Scarlet fever	230
Septic sore throat	4
Tetanus	1

CONNECTICUT—continued

	Cases
Tuberculosis (all forms)	46
Typhoid fever	6
Whooping cough	108

DELAWARE

Chicken pox	3
Diphtheria	5
Influenza	2
Measles	1
Scarlet fever	3
Tuberculosis	18
Whooping cough	3

FLORIDA

Diphtheria	9
Influenza	16
Malaria	6
Pneumonia	5
Scarlet fever	2
Typhoid fever	5

GEORGIA

Chicken pox	23
Conjunctivitis (infectious)	2
Diphtheria	10
Dysentery	2
Hookworm disease	2
Influenza	26
Malaria	9
Mumps	8
Pneumonia	4
Smallpox	1
Tuberculosis	7
Typhoid fever	2
Whooping cough	3

ILLINOIS

Cerebrospinal meningitis—Cook County	4
Diphtheria	
Cook county	88
Madison County	8
Scattering	41
Influenza	33
Lethargic encephalitis—Cook County	2
Measles	356
Pneumonia	421
Scarlet fever:	
Cook County	315
Kane County	11
La Salle County	14
St. Clair County	11
Vermilion County	8
Scattering	148
Smallpox:	
Madison County	8
Scattering	27
Tuberculosis	176
Typhoid fever	27
Whooping cough	301

INDIANA

Chicken pox	373
Diphtheria:	
Allen County	12
Marion County	20
Scattering	36
Influenza	79

INDIANA—continued

	Cases
Measles	120
Mumps	7
Pneumonia	14
Poliomyelitis—Rush County	1
Scarlet fever:	
Allen County	15
Elkhart County	13
Huntington County	22
Lake County	14
Kosciusko County	9
Marion County	12
St. Joseph County	33
Scattering	76
Smallpox	
Marion County	25
Scattering	46
Tuberculosis	34
Typhoid fever	15
Whooping cough	21

IOWA

Diphtheria	19
Scarlet fever	55
Smallpox	61

KANSAS

Cerebrospinal meningitis	1
Chicken pox	181
Diphtheria	44
Influenza	11
Measles	2
Mumps	379
Pneumonia	47
Scarlet fever	95
Septic sore throat	1
Smallpox	8
Tuberculosis	22
Typhoid fever	3
Whooping cough	23

LOUISIANA

Cerebrospinal meningitis	1
Diphtheria	14
Influenza	23
Malaria	4
Pneumonia	48
Poliomyelitis	1
Scarlet fever	21
Smallpox	41
Tuberculosis	37
Typhoid fever	26

MAINE

Chicken pox	46
Diphtheria	9
Influenza	13
Measles	6
Mumps	67
Pneumonia	13
Poliomyelitis	1
Scarlet fever	34
Smallpox	1
Tuberculosis	13
Typhoid fever	7
Vincent's angina	6
Whooping cough	8

MARYLAND[1]

	Cases
Chicken pox	88
Diphtheria	48
German measles	1
Impetigo contagiosa	1
Influenza	158
Lethargic encephalitis	1
Measles	55
Mumps	22
Ophthalmia neonatorum	1
Pneumonia (all forms)	155
Poliomyelitis	2
Scarlet fever	103
Septic sore throat	2
Tetanus	2
Tuberculosis	54
Typhoid fever	11
Whooping cough	54

MASSACHUSETTS

Cerebrospinal meningitis	4
Chicken pox	344
Conjunctivitis (suppurative)	16
Diphtheria	152
Dysentery	1
German measles	111
Hookworm disease	1
Influenza	11
Lethargic encephalitis	7
Measles	294
Mumps	103
Ophthalmia neonatorum	18
Pneumonia (lobar)	141
Poliomyelitis	3
Scarlet fever	398
Septic sore throat	4
Tetanus	2
Trachoma	1
Tuberculosis (all forms)	147
Typhoid fever	12
Whooping cough	99

MICHIGAN

Diphtheria	85
Measles	213
Pneumonia	146
Scarlet fever	312
Smallpox	35
Tuberculosis	118
Typhoid fever	14
Whooping cough	104

MINNESOTA

Cerebrospinal meningitis	1
Chicken pox	146
Diphtheria	35
Lethargic encephalitis	1
Measles	18
Pneumonia	8
Poliomyelitis	1
Scarlet fever	267
Smallpox	98
Tuberculosis	48
Typhoid fever	1
Whooping cough	46

MISSISSIPPI

	Cases
Diphtheria	27
Scarlet fever	21
Smallpox	10
Typhoid fever	15

MISSOURI

Cerebrospinal meningitis	1
Chicken pox	91
Diphtheria	85
Influenza	34
Measles	8
Mumps	31
Pneumonia	45
Scarlet fever	364
Septic sore throat	13
Smallpox	3
Tuberculosis	60
Typhoid fever	4
Whooping cough	7

MONTANA

Diphtheria	24
Scarlet fever	37
Smallpox	17
Typhoid fever	1

NEW JERSEY

Chicken pox	245
Diphtheria	115
Influenza	15
Measles	127
Paratyphoid fever	2
Pneumonia	246
Scarlet fever	220
Smallpox	4
Trachoma	1
Typhoid fever	17
Whooping cough	221

NEW MEXICO

Chicken pox	73
Diphtheria	14
German measles	1
Influenza	2
Measles	30
Mumps	4
Pneumonia	20
Scarlet fever	8
Tuberculosis	14
Typhoid fever	4

NEW YORK

(Exclusive of New York City and Rochester)

Cerebrospinal meningitis	1
Diphtheria	129
Influenza	45
Lethargic encephalitis	3
Measles	258
Pneumonia	331
Poliomyelitis	4
Scarlet fever	282
Smallpox	15
Typhoid fever	46
Whooping cough	266

[1] Week ended Friday.

NORTH CAROLINA

	Cases
Cerebrospinal meningitis	1
Chicken pox	146
Diphtheria	41
German measles	1
Measles	35
Scarlet fever	55
Septic sore throat	2
Smallpox	52
Typhoid fever	2
Whooping cough	90

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

	Cases
Diphtheria	14
Smallpox	6
Typhoid fever	31

OREGON

	Cases
Chicken pox	32
Diphtheria	
Portland	12
Scattering	14
Influenza	9
Lethargic encephalitis	4
Measles	6
Mumps	17
Pneumonia	[2] 14
Scarlet fever	22
Smallpox	
Portland	17
Scattering	4
Tuberculosis	8
Typhoid fever	5
Whooping cough	9

SOUTH DAKOTA

	Cases
Chicken pox	23
Diphtheria	4
Measles	4
Mumps	3
Pneumonia	2
Poliomyelitis	1
Scarlet fever	32
Smallpox	11
Typhoid fever	1
Whooping cough	12

TEXAS

	Cases
Cerebrospinal meningitis	1
Chicken pox	96
Dengue	45
Diphtheria	65
Dysentery (epidemic)	9
Influenza	473
Lethargic encephalitis	1
Measles	85
Mumps	32
Paratyphoid fever	1
Ophthalmia neonatorum	1
Pellagra	6
Pneumonia	61
Poliomyelitis	2
Scarlet fever	31
Smallpox	10
Trachoma	20
Tuberculosis	88

TEXAS—continued

	Cases
Typhoid fever	24
Typhus fever	1
Whooping cough	64

VERMONT

	Cases
Chicken pox	51
Diphtheria	3
Measles	8
Mumps	76
Scarlet fever	5
Typhoid fever	2
Whooping cough	6

WASHINGTON

	Cases
Chicken pox	136
Diphtheria	12
Measles	68
Mumps	42
Pneumonia	7
Scarlet fever	57
Smallpox	20
Tuberculosis	21
Typhoid fever	5
Whooping cough	15

WEST VIRGINIA

	Cases
Diphtheria	9
Scarlet fever	19
Smallpox	10
Typhoid fever	4

WISCONSIN

	Cases
Milwaukee:	
Chicken pox	91
Diphtheria	18
German measles	158
Influenza	2
Lethargic encephalitis	1
Measles	247
Mumps	53
Pneumonia	5
Scarlet fever	26
Smallpox	7
Tuberculosis	23
Typhoid fever	1
Whooping cough	37
Scattering	
Chicken pox	181
Diphtheria	41
Influenza	35
Measles	77
Mumps	113
Pneumonia	18
Poliomyelitis	1
Scarlet fever	124
Smallpox	50
Tuberculosis	15
Typhoid fever	3
Whooping cough	50

WYOMING

	Cases
Chicken pox	36
Diphtheria	4
Measles	2
Mumps	1
Pneumonia	5
Scarlet fever	7
Smallpox	2

[2] Deaths.

Reports for Week Ended January 3, 1925

DISTRICT OF COLUMBIA

	Cases
Chicken pox	42
Diphtheria	7
Influenza	2
Measles	2
Pneumonia	27
Scarlet fever	33
Tuberculosis	18
Typhoid fever	9
Whooping cough	17

NEBRASKA

	Cases
Chicken pox	18
Diphtheria	18
Influenza	1
Scarlet fever	18
Smallpox	8
Typhoid fever	1
Whooping cough	6

NORTH DAKOTA

	Cases
Chicken pox	11
Diphtheria	2
Measles	15
Pneumonia	5
Poliomyelitis	2
Scarlet fever	45
Smallpox	5
Tuberculosis	2

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
November, 1924										
South Carolina	1	399	140	2	1			7	25	5
December, 1924										
Arizona		19			179		1	55	25	7
Arkansas	2	35	443	173	25	15	0	67	42	90
Connecticut	1	293	42		71		2	824	0	33
Georgia		120	92	7	96	1		28	17	16
Indiana	1	237	289				3	462		50
Maine	1	43	28		14		6	149		20

Number of Cases of Certain Communicable Diseases Reported for the Month of October, 1924, by State Health Officers

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	42	284	20	79	117	103	156	207	104
Arizona	12	7	1	29	30	4	55	5	8
Arkansas	39	62	80	30	56	50	[1] 22	123	83
California	563	910	109	267	513	327	772	141	307
Colorado	270	100	8	28	105		264	30	18
Connecticut	90	173	24	44	247		143	29	204
Delaware	6	9	1	5	28		10	10	4
District of Columbia	10	38	5		58	1	115	16	24
Florida	1	86	4	14	9		119	52	11
Georgia	21	280	3	69	34	8	40	67	27
Idaho		9			17			32	
Illinois	893	557	181	323	891	187	1,237	176	641
Indiana		422			444			124	
Iowa	22	94	1	23	130	64		(2)	3
Kansas	288	408	12	200	380	7	208	61	118
Kentucky [3]									
Louisiana		85	14		25	19	[1] 140	98	12
Maine	66	37	10	97	94	1	36	45	172
Maryland	148	197	16	64	148	6	227	138	275
Massachuetts	352	583	250	155	742		582	64	231
Michigan	504	501	324	123	833	56	428	94	291
Minnesota	455	532	44		711	257	295	29	74
Mississippi	171	205	98	427	64	72	280	297	439
Missouri	94	386	16	25	733	12	186	107	62
Montana	43	56	7	8	87	38	55	22	9
Nebraska [4]									
New Hampshire [5]									
New Jersey	498	361	102		361	3	460	80	588
New York	1,103	981	495	363	850	34	1,836	288	1,377
North Carolina	148	1,110	133		276			122	446

[1] Pulmonary.
[2] Reports not required by law.
[3] Reports received weekly.
[4] Reports not received at time of going to press.
[5] Reports received annually

Number of Cases of Certain Communicable Diseases Reported for the Month of October, 1924, by State Health Officers—Continued.

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
North Dakota	54	25	91	2	116	17	15	12	86
Ohio	1,044	641	106	263	1,186	276	633	230	435
Oklahoma	11	127	10	3	74	16	16	191	43
Oregon	121	203	8	17	107	29	43	26	3
Pennsylvania	1,522	1,109	617	780	1,396	28	496	311	1,077
Rhode Island		76			45			10	
South Carolina		479		15	12	11		23	20
South Dakota	45	39	4		164	31	4	25	28
Tennessee	71	176	20		144	52	88	161	115
Texas [3]									
Utah	405	78	186	10	34	24	7	162	47
Vermont	80	22	45	48	21		[1] 8	6	60
Virginia	238	600	257		294	3	[1] 420	99	597
Washington	303	160	23	110	163	71	153	67	37
West Virginia	122	159	22		183	9	24	152	44
Wisconsin	600	282	200	130	462	54	160	28	422
Wyoming	49	3	18	26	27	9	2	7	19

[1] Pulmonary. [3] Reports received weekly.

Case Rates per 1,000 Population (Annual Basis) for the Month of October, 1924

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	0.20	1.37	0.10	0.38	0.56	0.50	0.75	1.00	0.50
Arizona	.36	.21	.03	.87	.90	.12	1.65	.15	.24
Arkansas	.25	.40	.51	.19	.36	.32	1.14	.79	.53
California	1.70	2.75	.33	.81	1.55	.99	2.33	.43	.93
Colorado	3.17	1.18	.09	.33	1.23		3.10	.35	.21
Connecticut	.71	1.36	.19	.35	1.94		1.12	.23	1.60
Delaware	.30	.46	.05	.25	1.42		.51	.51	.20
District of Columbia	.27	1.03	.13		1.56	.03	3.10	.43	.65
Florida	.01	.95	.04	.15	.10		1.31	.57	.12
Georgia	.08	1.09	.01	.27	.13	.03	.16	.26	.11
Idaho		.22			.42			.79	
Illinois	1.53	.96	.31	.55	1.53	.32	2.12	.30	1.10
Indiana		1.64			1.73			.48	
Iowa	.10	.45	.00	.11	.62	.30		[2]	.01
Kansas	1.88	2.67	.08	1.31	2.48	.05	1.36	.40	.77
Kentucky [3]									
Louisiana		.54	.09		.16	.12	[1] .89	.62	.08
Maine	1.00	.56	.15	1.47	1.42	.02	.54	.68	2.60
Maryland	1.15	1.53	.12	.50	1.15	.05	1.76	1.07	2.13
Massachusetts	1.02	1.69	.72	.45	2.15		1.69	.19	.67
Michigan	1.46	1.46	.94	.36	2.42	.16	1.24	.27	.84
Minnesota	2.12	2.48	.21		3.32	1.20	1.38	.14	.35
Mississippi	1.13	1.35	.65	2.82	.42	.47	1.85	1.96	2.89
Missouri	.32	1.32	.05	.09	2.50	.04	.64	.37	.21
Montana	.81	1.05	.13	.15	1.63	.71	1.03	.41	.17
Nebraska [4]									
New Hampshire [5]									
New Jersey	1.71	1.24	.35		1.2	.01	1.58	.27	2.02
New Mexico									
New York	1.19	1.06	.53	.39	.91	.04	1.98	.31	1.48
North Carolina	.64	4.81	.58		1.20			.53	1.93
North Dakota	.94	.43	1.58	.03	2.02	.30	.26	.21	1.49
Ohio	1.98	1.22	.20	.50	2.25	.52	1.20	.44	.83
Oklahoma	.06	.68	.05	.02	.40	.09	.09	1.02	.23
Oregon	1.71	2.87	.11	.24	1.51	.41	.61	.37	.04
Pennsylvania	1.95	1.42	.79	1.00	1.79	.04	.64	.40	1.38
Rhode Island		1.42			.84			.19	
South Carolina		3.21		.10	.08	.07		.15	.13
South Dakota	.80	.70	.07		2.93	.55	.07	.45	.50
Tennessee	.35	.86	.10		.71	.25	.43	.79	.56
Texas [3]									
Utah	9.87	1.90	4.53	.24	.83	.58	.17	3.95	1.14
Vermont	2.68	.74	1.51	1.61	.70		[1] .27	.20	2.01
Virginia	1.16	2.92	1.25		1.43	.01	[1] 2.05	.48	2.91
Washington	2.46	1.30	.19	.89	1.82	.58	1.24	.54	.30
West Virginia	.91	1.19	.16		1.37	.07	.18	1.14	.33
Wisconsin	2.56	1.20	.85	.55	1.97	.23	.68	.12	1.80
Wyoming	2.67	.16	.98	1.42	1.47	.49	.11	.38	1.03

[1] Pulmonary.
[2] Reports not required by law.
[3] Reports received weekly.
[4] Reports not received at time of going to press.
[5] Reports received annually.

PLAGUE IN LOS ANGELES, CALIF.

A case of human plague which occurred in Los Angeles, Calif., January 6, 1925, was confirmed January 12, 1925.

The following items are taken from the report of plague-eradicative work at Los Angeles, Calif., for the week ended December 27, 1924:

Number of rats examined during week ended Dec. 27, 1924	4, 390
Number of plague-infected rats found during week	9
Number of squirrels examined during week ended Dec. 27, 1924	141
Number of squirrels found plague infected	0

RODENT PLAGUE IN OAKLAND, CALIF.

During the week ended December 27, 1924, plague infection was found in four rats captured in Oakland, Calif.

RODENT PLAGUE IN NEW ORLEANS, LA.

The following items are taken from the report of plague-eradicative measures at New Orleans, La., for the week ended December 27, 1924:

Number of vessels inspected for rat guards	825
Number of vessels fumigated with cyanide gas	23
Number of rodents examined for plague	2, 570
Number of rodents found positive for plague	0

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended December 27, 1924, 35 States reported 1,379 cases of diphtheria. For the week ended December 29, 1923, the same States reported 2,643 cases of this disease. One hundred and five cities, situated in all parts of the country and having an aggregate population of nearly 28,900,000, reported 831 cases of diphtheria for the week ended December 27, 1924. Last year, for the corresponding week, they reported 1,368 cases. The estimated expectancy for these cities was 1,361 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty States reported 1,099 cases of measles for the week ended December 27, 1924, and 8,686 cases of this disease for the week ended December 29, 1923. One hundred and five cities reported 584 cases of measles for the week this year and 2,591 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: Thirty-five States—this year, 2,762 cases; last year, 3,436 cases. One hundred and five cities—this year, 1,354 cases; last year, 1,510 cases; estimated expectancy, 1,014 cases.

Smallpox.—For the week ended December 27, 1924, 35 States reported 654 cases of smallpox. Last year, for the corresponding week, they reported 645 cases. One hundred and five cities reported smallpox for the week as follows: 1924, 228 cases; 1923, 193 cases; es-

timated expectancy, 88 cases. These cities reported 26 deaths from smallpox for the week this year, 25 of which occurred at Minneapolis.

Typhoid fever.—Three hundred and sixty-one cases of typhoid fever were reported for the week ended December 27, 1924, by 34 States. For the corresponding week of 1923 the same States reported 255 cases. One hundred and five cities reported 197 cases of typhoid fever for the week this year and 54 cases for the week last year. The estimated expectancy for these cities was 52 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 105 cities as follows: 1924, 931 deaths; 1923, 801 deaths.

City reports for week ended December 27, 1924

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported	Scarlet fever	
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported				Cases, estimated expectancy	Cases reported
NEW ENGLAND										
Maine:										
Lewiston	------	1	1	0	0	1	------	4	1	1
Portland	16	2	3	0	0	0	32	4	3	1
New Hampshire:										
Concord	0	0	0	0	0	0	0	4	1	1
Nashua	0	0	0	0	0	2	0	2	1	0
Vermont:										
Barre	0	0	0	0	0	0	4	0	1	2
Burlington	2	1	0	0	0	0	1	3	2	0
Massachusetts:										
Boston	38	67	38	8	3	41	4	21	46	79
Fall River	3	4	5	0	0	0	0	1	3	1
Springfield	6	5	3	2	1	43	8	1	7	44
Worcester	10	4	2	2	0	2	0	4	9	11
Rhode Island:										
Pawtucket	0	3	2	0	0	0	0	1	1	2
Providence	0	13	5	0	0	0	0	4	9	9
Connecticut:										
Bridgeport	0	8	6	1	2	0	0	1	5	11
Hartford	1	9	11	0	0	1	1	0	7	13
New Haven	17	7	1	0	0	25	0	5	6	28
MIDDLE ATLANTIC										
New York:										
Buffalo	17	31	8	2	1	43	4	6	22	20
New York	152	230	170	11	18	29	9	215	153	197
Rochester	6	14	3	0	1	4	4	3	11	27
Syracuse	10	9	2	0	0	2	1	7	12	10
New Jersey:										
Camden	6	4	3	0	0	12	0	6	3	8
Newark	32	22	6	11	2	35	1	10	18	19
Trenton	5	9	2	0	0	8	0	1	2	3
Pennsylvania:										
Philadelphia	69	79	71	------	3	46	24	75	53	105
Pittsburgh	67	29	27	------	2	56	15	28	25	56
Reading	7	6	2	0	0	0	4	0	1	0
Scranton	0	5	1	0	0	0	0	7	3	2

City reports for week ended December 27, 1924—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported
E. NORTH CENTRAL										
Ohio:										
Cincinnati	16	19	6	2	4	1	1	9	12	12
Cleveland	69	42	31	7	4	1	4	15	35	27
Columbus	13	8	3	0	1	0	0	7	8	9
Toledo	25	12	16	0	0	1	0	3	15	14
Indiana:										
Fort Wayne	0	4	7	0	0	0	0	2	3	5
Indianapolis	69	20	3	0	1	1	2	7	10	4
South Bend	6	1	1	0	0	3	0	1	4	7
Terre Haute	8	3	0	0	0	0	0	4	2	2
Illinois:										
Chicago	83	167	69	8	7	101	8	71	134	137
Cicero	1	3	0	0	0	1	0	5	1	2
Springfield	3	2	5	1	0	0	0	0	1	1
Michigan:										
Detroit	41	80	39	0	2	2	3	32	74	65
Flint	10	11	1	0	0	0	0	0	8	4
Grand Rapids	6	6	3	0	1	5	1	2	6	16
Saginaw	0	3	2	0	0	0	0	4	3	0
Wisconsin:										
Madison	6	2	2	0		0	52		2	3
Milwaukee	24	24	7	2	2	68	19	12	34	12
Racine	8	2	4	0	0	1	4	1	5	4
Superior	0	1	0	0	0	2	0	2	2	0
W. NORTH CENTRAL										
Minnesota:										
Duluth	2	2	0	0	0	0	0	2	5	12
Minneapolis	84	21	15	0	0	0	0	4	26	52
St. Paul	31	18	7	0	0	1	7	9	16	24
Iowa:										
Davenport	3	1	0	0		0	0		2	0
Des Moines	0	5	7	0		0	0		8	2
Sioux City	4	3	0	0		0	1		3	0
Waterloo	2	0	0	0		1			4	1
Missouri:										
Kansas City	10	14	3	3	3	0	1	12	12	49
St. Joseph	3	4	3	0	0	0	0	2	3	1
St. Louis	26	81	42	0	0	3	3		30	80
North Dakota:										
Fargo	8	0	0	0	0	0	1	0	1	2
Grand Forks	0	1	1	0		0	0		1	1
South Dakota:										
Aberdeen	0		0	0		0	0			0
Sioux Falls	1	1	1	0	0	0	0	0	2	1
Nebraska:										
Lincoln		2							2	
Omaha	8	6	4	0	0	0	0	9	6	2
Kansas:										
Topeka	28	2	2	0	0	0	64	2	1	0
Wichita	14	7	3	0	0	0	2	2	3	1
SOUTH ATLANTIC										
Delaware:										
Wilmington	3	2	1	0	0	0	0	7	3	2
Maryland:										
Baltimore	46	37	32	43	2	2	3	30	25	21
Cumberland		1	1	0	0	0		1	1	1
Frederick	0	2	0	0	0	0	0	0	0	0
District of Columbia:										
Washington	21	20	7	4	3	4		18	19	28
Virginia:										
Lynchburg	10	2	1	0	0	0	22	2	0	0
Norfolk	10	3	3	0	0	0	55	5	2	1
Richmond	1	8	7	0	0	0	0	6	5	2
Roanoke	4	2	0	0	0	0	0	2	1	3
West Virginia:										
Charleston	7	1	1	1	0	6	1	1	2	2
Huntington	0	2	3	0		0	0		1	0
Wheeling	10	2	0	0		5	0	3	1	0

City reports for week ended December 27, 1924—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported	Scarlet fever	
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported				Cases, estimated expectancy	Cases reported
SOUTH ATLANTIC—continued										
North Carolina:										
Raleigh	9	2	1	0	0	0	0	2	1	0
Wilmington	3	0	0	0	0	0	0	0	1	0
Winston-Salem	1	1	1	0	0	0	0	1	1	0
South Carolina:										
Charleston	1	2	1	0	1	0	0	0	0	2
Columbia	0	1	0	0	0	0	2	5	0	0
Greenville	0	0	0	0	0	0	0	0	0	0
Georgia:										
Atlanta	0	4	4	1	1	0	0	14	5	3
Brunswick	......	0	......	......	......	......	......	......	0	......
Savannah	0	2	3	0	0	0	2	2	1	0
Florida:										
St. Petersburg	0	0	1	0	0	0	0	0	0	0
Tampa	1	2	2	0	0	0	0	2	0	0
EAST SOUTH CENTRAL										
Kentucky:										
Covington	1	2	0	0	0	0	0	4	2	0
Louisville	5	11	2	0	1	0	1	4	5	4
Tennessee:										
Memphis	1	8	3	0	0	0	0	9	3	10
Nashville	3	4	1	0	2	0	1	3	3	1
Alabama:										
Birmingham	0	3	0	2	4	0	0	10	4	6
Mobile	1	1	0	0	2	0	0	6	1	1
Montgomery	......	1	......	......	......	......	......	......	0	......
WEST SOUTH CENTRAL										
Arkansas:										
Fort Smith	0	3	0	0	......	0	1	......	1	2
Little Rock	0	2	0	0	1	2	0	2	2	3
Louisiana:										
New Orleans	6	14	9	10	2	0	0	16	3	6
Shreveport	1	......	1	0	0	0	0	7	......	0
Oklahoma:										
Oklahoma	2	2	2	0	1	0	0	1	3	2
Tulsa	6	4	0	0	......	0	0	......	2	1
Texas:										
Dallas	10	11	8	0	0	1	0	2	2	1
Galveston	0	1	0	0	0	0	0	2	0	0
Houston	......	3	4	0	0	0	......	5	2	1
San Antonio	0	2	3	0	0	0	0	11	1	1
MOUNTAIN										
Montana:										
Billings	8	0	0	0	0	0	1	1	1	2
Great Falls	3	1	4	0	0	1	0	1	1	0
Helena	0	0	0	0	0	0	0	1	0	0
Missoula	......	1	4	0	0	0	......	0	1	2
Idaho:										
Boise	2	0	0	0	0	0	0	0	1	0
Colorado:										
Denver	17	10	11	0	1	0	33	16	9	9
Pueblo	9	5	2	0	0	0	3	0	3	1
New Mexico:										
Albuquerque	0	1	0	0	0	0	0	0	0	0
Arizona:										
Phoenix	0	......	2	0	0	0	0	5	......	0
Utah:										
Salt Lake City	44	2	1	0	0	1	7	4	5	2
Nevada:										
Reno	0	0	0	0	0	0	0	0	0	1
PACIFIC										
Washington:										
Seattle	36	6	12	0	......	1	10	......	7	7
Spokane	18	4	6	0	......	12	0	......	5	2
Tacoma	0	3	4	0	0	0	3	5	3	1
California:										
Los Angeles	......	32	41	2	2	7	......	20	15	20
Sacramento	0	2	1	0	0	1	0	3	2	1
San Francisco	15	25	14	4	1	3	6	8	12	15

City reports for week ended December 27, 1924—Continued

Division, State, and city	Population July 1, 1923, estimated	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND										
Maine:										
Lewiston	33,790	0	0	0	0	0	0	0	------	19
Portland	73,129	0	0	0	1	0	2	0	2	23
New Hampshire:										
Concord	22,408	0	0	0	0	0	0	0	0	13
Nashua	29,234	0	0	0	2	0	0	0	0	10
Vermont:										
Barre	[1] 10,008	0	0	0	0	0	0	0	0	3
Burlington	23,613	0	0	0	0	0	0	0	1	11
Massachusetts:										
Boston	770,400	0	0	0	17	1	1	0	14	237
Fall River	120,912	0	0	0	1	0	1	0	0	33
Springfield	144,227	0	0	0	0	0	0	0	3	22
Worcester	191,927	0	0	0	3	0	1	0	0	46
Rhode Island:										
Pawtucket	68,799	0	0	0	0	0	0	0	0	22
Providence	242,378	0	0	0	3	0	0	0	4	60
Connecticut:										
Bridgeport	[1] 143,555	1	0	0	0	0	2	0	0	33
Hartford	[1] 138,036	0	0	0	3	0	0	0	2	32
New Haven	172,967	0	0	0	1	0	0	0	4	37
MIDDLE ATLANTIC										
New York:										
Buffalo	536,718	1	0	0	9	1	3			
New York	5,927,625	0	0	0	[2] 92	12	96	0	19	145
Rochester	317,867	0	0	0	4	1	3	15	75	1,422
Syracuse	184,511	0	0	0	0	1	0	1	0	59
New Jersey:								0	0	37
Camden	124,157	0	2	0	2	1	0			
Newark	438,699	0	0	0	5	1	2	0	0	24
Trenton	127,390	0	0	0	0	0	2	1	43	106
Pennsylvania:								0	6	34
Philadelphia	1,922,788	0	1	0	42	3	4			
Pittsburgh	613,442	1	0	0	12	1	3	0	39	489
Reading	110,917	0	0	0	4	1	0	3	3	166
Scranton	140,636	0	0	0	0	0	3	0	10	35
								1	3	------
EAST NORTH CENTRAL										
Ohio:										
Cincinnati	406,312	1	0	0	7	1	0	1	3	150
Cleveland	888,519	2	0	0	14	1	3	0	9	173
Columbus	261,082	0	2	0	12	0	0	0	0	79
Toledo	268,338	1	1	0	4	0	0	0	6	61
Indiana:										
Fort Wayne	93,573	0	0	0	2	1	3	0	0	21
Indianapolis	342,718	3	14	0	7	0	1	0	4	87
South Bend	76,709	0	0	0	0	0	0	0	0	8
Terre Haute	68,939	1	5	0	0	0	0	0	0	20
Illinois:										
Chicago	2,886,121	1	0	0	35	4	15	3	107	627
Cicero	55,968	0	0	0	1	0	0	0	1	11
Springfield	61,833	1	0	0	0	0	0	0	0	25
Michigan:										
Detroit	995,668	3	2	0	19	2	8	2	18	234
Flint	117,968	1	0	0	0	0	0	0	0	18
Grand Rapids	145,947	1	0	0	1	0	1	0	5	30
Saginaw	69,754	0	0	0	0	0	0	0	0	25
Wisconsin:										
Madison	42,519	0	0	------	------	0	0	------	5	6
Milwaukee	484,595	2	1	0	6	1	2	0	4	107
Racine	64,393	1	3	0	1	0	0	0	1	7
Superior	[1] 39,671	2	0	0	1	0	0	0	0	10

[1] Population Jan. 1, 1920.

[2] Pulmonary only.

City reports for week ended December 27, 1924—Continued

Division, State, and city	Population July 1, 1923, estimated	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL										
Minnesota:										
Duluth	106,289	1	0	0	0	0	0	0	1	19
Minneapolis	409,125	8	60	25	5	1	1	0	0	97
St. Paul	241,891	13	6	1	5	1	0	0	2	65
Iowa:										
Davenport	61,262	1	1			0	0		3	
Des Moines	140,923	1	2			0	0		0	
Sioux City	79,662	0	1			0	0		0	
Waterloo	39,667	0	8			0	0			
Missouri:										
Kansas City	351,819	2	0	0	2	1	0	0	4	110
St. Joseph	78,232	1	0	0	0	0	0	0	0	31
St. Louis	803,853	1	11	0	21	2	6	0	1	
North Dakota:										
Fargo	24,841	1	0	0	0	0	0	0	0	8
Grand Forks	14,547	1	0			0	0		0	1
South Dakota:										
Aberdeen	15,829		0				0		0	
Sioux Falls	29,206	0	0	0	0	0	0	0	0	5
Nebraska:										
Lincoln	58,761	1				0				
Omaha	204,382	3	13	0	1	1	0	0	0	48
Kansas:										
Topeka	52,555	0	0	0	1	0	2	0	3	23
Wichita	79,261	0	0	0	0	0	0	0	2	28
SOUTH ATLANTIC										
Delaware:										
Wilmington	117,728	0	0	0	0	1	2	0	1	30
Maryland:										
Baltimore	773,580	0	0	0	14	3	1	1	20	204
Cumberland	32,361	0	0	0	0	0	1	1		17
Frederick	11,301	0	0	0	0	0	0	0	0	0
District of Columbia:										
Washington	[1] 437,571	0	0	0	10	1	5	1	7	148
Virginia:										
Lynchburg	30,277	0	0	0	0	0	0	0	0	13
Norfolk	159,089	1	0	0	3	0	0	0	1	
Richmond	181,044	0	0	0	7	1	0	0	1	56
Roanoke	55,502	0	0	0	0	0	2	0	0	15
West Virginia:										
Charleston	45,597	0	6	0	1	0	3	0	2	14
Huntington	57,918	0	0			1	0		0	
Wheeling	[1] 56,208	0	0	0	0	0	0	0	2	20
North Carolina:										
Raleigh	29,171	0	4	0	3	0	2	0	1	10
Wilmington	35,719	0	1	0	0	0	0	0	1	15
Winston-Salem	56,230	1	1	0	0	0	0	0	0	5
South Carolina:										
Charleston	71,245	1	0	0	0	0	0	0	0	21
Columbia	39,688	0	0	0	0	0	0	0	3	27
Greenville	25,789	0	1	0	0	0	0	0	0	0
Georgia:										
Atlanta	222,963	2	1	0	7	0	0	0	4	73
Brunswick	15,937	0				0				
Savannah	89,448	0	0	0	1	0	1	0	1	25
Florida:										
St. Petersburg	24,403	0	0	0	1	0	1	0	1	13
Tampa	56,050	0	0	0	0	0	0	1	0	24

[1] Population Jan. 1, 1920.

City reports for week ended December 27, 1924—Continued

Division, State, and city	Population July 1, 1923, estimated	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
EAST SOUTH CENTRAL										
Kentucky:										
Covington	57,877	0	0	0	2	0	0	0	0	20
Louisville	257,671	0	0	0	3	1	3	1	2	55
Tennessee:										
Memphis	170,067	1	1	0	3	0	2	1	0	64
Nashville	121,128	1	0	0	3	0	0	0	0	31
Alabama:										
Birmingham	195,901	1	30	0	1	0	0	0	0	50
Mobile	63,858	1	0	0	0	1	1	0	0	25
Montgomery	45,383	0	------	------	------	0	------	------	------	------
WEST SOUTH CENTRAL										
Arkansas:										
Fort Smith	30,635	0	0	------	------	0	0	------	1	------
Little Rock	70,916	1	0	0	2	0	0	0	0	------
Louisiana:										
New Orleans	404,575	1	0	0	21	1	6	2	1	178
Shreveport	54,590	------	1	0	0	------	0	0	0	28
Oklahoma:										
Oklahoma	101,150	2	0	0	4	0	0	0	0	20
Tulsa	102,018	1	0	------	------	0	0		------	------
Texas:										
Dallas	177,274	0	1	0	7	1	0	0	5	45
Galveston	46,877	0	0	0	0	0	0	0	0	14
Houston	154,970	1	2	0	6	0	0	0	------	51
San Antonio	184,727	0	0	0	6	0	0	0	0	73
MOUNTAIN										
Montana:										
Billings	16,927	0	0	0	0	0	0	0	13	7
Great Falls	27,787	1	5	0	0	0	0	0	0	10
Helena	[1] 12,037	0	0	0	1	0	0	0	0	7
Missoula	[1] 12,668	0	0	0	1	0	0	0	------	8
Idaho:										
Boise	22,806	0	0	0	0	0	0	0	0	4
Colorado:										
Denver	272,031	5	0	0	12	0	0	0	1	98
Pueblo	43,519	0	0	0	1	0	0	0	0	10
New Mexico:										
Albuquerque	16,648	0	0	0	2	0	0	0	0	4
Arizona:										
Phoenix	33,899	------	0	0	4	------	0	1	0	29
Utah:										
Salt Lake City	126,241	3	0	0	1	0	0	0	2	21
Nevada:										
Reno	12,429	0	0	0	0	0	0	0	0	4
PACIFIC										
Washington:										
Seattle	[1] 315,685	1	7	------	------	1	1	------	0	------
Spokane	104,573	9	0	------	------	0	0	------	0	------
Tacoma	101,731	1	1	0	0	0	0	0	0	21
California:										
Los Angeles	666,853	2	28	0	33	2	3	3	------	244
Sacramento	69,950	1	5	0	3	0	0	0	0	24
San Francisco	539,038	0	3	0	19	0	1	0	4	166

[1] Population Jan. 1, 1920.

City reports for week ended December 27, 1924—Continued

Division, State, and city	Cerebrospinal meningitis: Cases	Cerebrospinal meningitis: Deaths	Lethargic encephalitis: Cases	Lethargic encephalitis: Deaths	Pellagra: Cases	Pellagra: Deaths	Poliomyelitis (infantile paralysis): Cases, est. expectancy	Poliomyelitis (infantile paralysis): Cases	Poliomyelitis (infantile paralysis): Deaths
NEW ENGLAND									
Massachusetts.									
Boston	0	0	3	0	0	0	0	0	0
Fall River	0	0	1	1	0	0	0	0	0
Springfield	0	0	0	1	0	0	0	0	0
Worcester	0	0	0	2	0	0	0	0	0
MIDDLE ATLANTIC									
New York.									
Buffalo	0	0	0	0	0	0	0	1	0
New York	0	0	6	6	0	0	1	10	1
New Jersey:									
Camden	0	0	1	1	0	0	0	0	0
Newark	3	0	0	0	0	0	0	0	0
Pennsylvania.									
Philadelphia	0	0	2	2	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio.									
Cleveland	0	0	1	0	0	0	0	0	0
Illinois:									
Chicago	0	0	3	0	0	0	0	1	0
Wisconsin									
Milwaukee	0	0	2	2	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	0	0	0	1	0	0	0	0	0
St. Paul	0	0	1	0	0	0	0	0	0
Iowa:									
Davenport	0	------	0	----	0	------	0	1	------
Missouri:									
Kansas City	0	0	1	1	0	0	0	0	0
St. Louis	0	1	0	0	0	0	0	0	0
North Dakota:									
Grand Forks	0	------	0	------	0	------	0	2	------
MIDDLE ATLANTIC									
Maryland:									
Baltimore	0	0	0	0	0	0	0	1	0
Virginia:									
Roanoke	0	0	0	0	0	1	0	0	0
South Carolina:									
Columbia	0	0	0	0	0	3	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	0	0	0	0	0	1	0	0	0
WEST SOUTH CENTRAL									
Texas:									
Houston	2	0	0	0	0	0	0	0	0
MOUNTAIN									
Montana:									
Helena	0	1	0	0	0	0	0	0	0
Nevada:									
Reno	0	0	0	0	0	0	0	1	0
PACIFIC									
California:									
Los Angeles	1	1	0	0	0	0	0	1	0
San Francisco	1	0	0	0	0	0	0	1	0

[1] Population Jan. 1, 1920.

The following table gives a summary of the reports from 105 cities for the 10-week period ended December 27, 1924. The cities included in this table are those whose reports have been published for all 10 weeks in the Public Health Reports. Eight of these cities did not report deaths. The aggregate population of the cities reporting cases was estimated at nearly 29,000,000 on July 1, 1923, which is the latest date for which estimates are available. The cities reporting deaths had more than 28,000,000 population on that date. The number of cities included in each group and the aggregate population are shown in a separate table below.

Summary of weekly reports from cities, October 19 to December 27, 1924

DIPHTHERIA CASES

	1924, week ended—									
	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27
Total	988	965	1,128	1,112	1,115	970	1,058	1,063	1,102	831
New England	89	88	78	82	84	67	104	[1] 77	89	76
Middle Atlantic	228	235	304	312	314	284	336	345	370	294
East North Central	176	211	279	247	227	234	223	225	[2] 248	181
West North Central	149	127	128	147	160	148	149	128	[3] 143	81
South Atlantic	172	131	148	109	129	128	[4] 89	99	[5] 72	[6] 66
East South Central	41	27	35	26	32	21	[7] 21	17	26	[8] 8
West South Central	36	40	46	59	45	27	31	45	42	25
Mountain	23	28	38	36	27	17	18	33	26	22
Pacific	74	78	72	94	97	44	87	94	[9] 86	78

MEASLES CASES

	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27
Total	197	241	310	322	400	364	613	706	779	584
New England	28	32	36	41	49	59	66	[1] 104	78	112
Middle Atlantic	92	112	144	135	154	156	207	238	227	235
East North Central	55	70	91	102	131	114	269	279	[2] 428	186
West North Central	3	7	7	10	14	5	12	17	[3] 9	5
South Atlantic	2	6	13	4	11	7	[4] 10	19	[5] 11	[6] 17
East South Central	0	0	2	2	2	0	[7] 0	1	2	[8] 0
West South Central	1	0	1	1	1	2	0	0	4	3
Mountain	2	3	2	4	4	3	2	5	6	2
Pacific	14	11	14	23	34	18	47	43	[9] 14	24

SCARLET FEVER CASES

	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27
Total	938	1,021	1,153	1,097	1,238	1,283	1,488	1,735	1,722	1,354
New England	121	96	114	135	155	176	219	[1] 235	222	206
Middle Atlantic	213	298	354	330	365	389	389	513	529	445
East North Central	214	256	270	262	303	307	346	415	[2] 415	310
West North Central	253	216	225	220	228	245	297	302	[3] 290	226
South Atlantic	57	57	67	58	72	63	[4] 83	124	[5] 106	[6] 65
East South Central	14	24	29	14	17	10	[7] 28	19	42	[8] 22
West South Central	17	15	25	18	14	20	27	35	40	11
Mountain	13	19	19	20	24	15	31	17	25	20
Pacific	36	40	50	40	60	58	68	75	[9] 53	46

[1] Figures for Worcester, Mass., estimated. Reports not received at time of going to press.
[2] Figures for Fort Wayne, Ind., estimated.
[3] Figures for Topeka, Kans, estimated
[4] Figures for Norfolk, Va., estimated.
[5] Figures for Winston-Salem, N. C., estimated.
[6] Figures for Brunswick, Ga., estimated.
[7] Figures for Memphis, Tenn., estimated.
[8] Figures for Montgomery, Ala., estimated.
[9] Figures for Los Angeles and Sacramento, Calif., estimated.

***Summary of weekly reports from cities, October 19 to December 27, 1924*—Contd.**

SMALLPOX CASES

	1924, week ended—									
	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27
Total	134	134	138	192	188	213	319	236	248	228
New England	0	0	0	0	0	0	0	[1] 0	0	0
Middle Atlantic	5	2	4	0	5	9	9	1	3	3
East North Central	19	16	6	11	14	19	13	18	[2] 20	27
West North Central	64	70	82	100	85	114	201	123	[3] 101	99
South Atlantic	3	1	3	7	6	3	[4] 22	19	[5] 8	[6] 14
East South Central	11	9	8	12	21	13	[7] 29	31	55	[8] 34
West South Central	2	2	2	8	6	7	4	3	11	4
Mountain	3	0	1	7	2	1	2	2	3	5
Pacific	27	34	32	47	49	47	39	39	[9] 47	42

TYPHOID FEVER CASES

	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27
Total	136	106	124	107	133	161	255	237	307	197
New England	6	5	7	5	5	9	12	[1] 6	12	7
Middle Atlantic	40	35	23	33	46	90	140	134	199	113
East North Central	14	11	14	11	15	10	30	43	[2] 45	33
West North Central	5	9	9	3	8	2	4	8	[3] 7	9
South Atlantic	22	13	21	10	14	15	[4] 27	17	[5] 15	[6] 18
East South Central	21	12	14	20	14	19	[7] 18	10	9	[8] 6
West South Central	12	6	18	11	13	8	13	11	12	6
Mountain	10	5	9	8	2	2	1	2	1	0
Pacific	6	10	9	6	16	6	10	6	[9] 7	5

INFLUENZA DEATHS

	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27
Total	18	35	38	43	41	56	63	91	84	81
New England	1	1	5	0	2	2	7	[1] 2	6	6
Middle Atlantic	9	21	23	17	17	15	21	43	33	27
East North Central	5	5	5	5	7	15	13	18	[2] 12	22
West North Central	0	0	0	0	0	3	2	2	[3] 4	3
South Atlantic	2	3	3	4	6	7	[4] 5	11	[5] 11	[6] 7
East South Central	0	1	1	4	2	5	[7] 4	4	4	[8] 9
West South Central	0	3	1	7	3	5	6	7	8	3
Mountain	0	0	0	1	4	2	3	3	5	1
Pacific	1	1	0	5	0	2	2	1	[9] 1	3

PNEUMONIA DEATHS

	Oct. 25	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27
Total	470	593	636	676	646	701	831	863	917	850
New England	27	42	33	35	38	58	51	[1] 45	54	46
Middle Atlantic	227	270	305	294	301	300	371	397	377	351
East North Central	77	95	109	116	122	126	155	168	[2] 195	170
West North Central	20	28	29	32	36	34	29	40	[3] 29	42
South Atlantic	65	87	75	83	57	83	[4] 91	86	[5] 120	[6] 101
East South Central	13	21	24	46	36	43	[7] 39	38	52	[8] 36
West South Central	17	21	22	34	20	21	32	35	32	45
Mountain	16	6	8	10	15	13	22	21	29	23
Pacific	17	23	31	26	21	23	41	33	[9] 29	36

[1] Figures for Worcester, Mass., estimated. Reports not received at time of going to press.
[2] Figures for Fort Wayne, Ind., estimated.
[3] Figures for Topeka, Kans., estimated.
[4] Figures for Norfolk, Va., estimated.
[5] Figures for Winston-Salem, N. C., estimated.
[6] Figures for Brunswick, Ga., estimated.
[7] Figures for Memphis, Tenn., estimated.
[8] Figures for Montgomery, Ala., estimated.
[9] Figures for Los Angeles and Sacramento, Calif., estimated.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

HAWAII

Plague-infected rodent, Honokaa.—A plague-infected rodent was found December 9, 1924, 1 mile north of Honokaa Village, Hawaii.

NETHERLANDS EAST INDIES

Epidemic plague—Macassar—Soerabaya.—Epidemic plague was reported present at the port of Macassar, Celebes Island, October 29, and at the port of Soerabaya, Island of Java, November 4, 1924.

RUSSIA

Communicable diseases—January to June, 1924.—During the period January 1 to June 30, 1924, communicable diseases were reported in Russia as follows: Anthrax (Siberian), 3,733 cases; measles, 101,000 cases; smallpox, 9,683 cases; typhoid fever, 43,000; typhus fever, 92,000 cases; recurrent fever, 32,000 cases. For the corresponding period of the year 1923, cases were reported as follows: Anthrax, 2,436; measles, 64,744; smallpox, 37,240; typhoid fever, 61,068; typhus fever, 215,000; recurrent fever, 202,000.

UNION OF SOUTH AFRICA

Pneumonic plague—De Aar, Cape Province.—November 25, 1924, a localized outbreak of epidemic pneumonia was reported at De Aar, Cape Province, Union of South Africa. Twenty-three cases and 14 deaths had been reported. The first death occurred October 25. On November 26 the disease was stated to be pneumonic plague. Plague infection was reported among veld rodents in the vicinity. The town of De Aar is an important railway junction.

VENEZUELA

Epidemic paratyphoid fever—Puerto Cabello.—Epidemic paratyphoid fever was reported present at Puerto Cabello, Venezuela, December 10, 1924. It was stated that a large number of cases had occurred with few deaths.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given

Reports Received During Week Ended January 16, 1925[1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Nov 2-8, 1924: Cases, 2,980; deaths, 1,613.
Calcutta	Nov 23-29	8	8	
Madras	Nov 23-Dec 6	27	15	
Rangoon	Nov 9-29	5	2	
Indo-China				Aug. 1-31, 1924 Cases, 7; deaths, 6. August, 1923: Cases, 13; deaths 10 native, and 1 fatal case European.
Province—				
Anam	Aug 1-31	1	1	
Cambodia	do	2	2	
Cochin-China	do	4	3	

PLAGUE

Place	Date	Cases	Deaths	Remarks
British East Africa				
Kenya—				
Uganda	Aug 1-31	79	62	
Celebes				
Macassar	Oct 29			Epidemic
China.				
Nanking	Nov 23-Dec. 6			Present.
Hawaii				Dec. 9, 1924 Plague-infected rodent found in vicinity of Honokaa village
India				Nov 2-8, 1924. Cases, 2,380, deaths, 1,791
Madras (Presidency)	Nov. 23-Dec. 6	182	128	
Rangoon	Nov 9-29	9	7	
Indo-China				Aug 1-31, 1924 Cases, 13, deaths, 8 Corresponding period, 1923 Cases, 23, deaths, 21.
Province—				
Anam	Aug 1-31	2	2	
Cambodia	do	9	6	
Cochin-China	do	2		
Java				
Cheribon district	Oct 21-Nov. 3	3	4	
Pekalongan district	do		24	
Soerabaya district—				
Soerabaya	Nov. 4			Epidemic Seaport.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Brazil.				
Pernambuco	Nov 16-22	21	4	
British South Africa				
Northern Rhodesia	Nov 4-10	4		
Egypt				
Alexandria	Nov 26-Dec 2	1		
Great Britain				
New Castle on Tyne	Dec 7-13	3		
India				Nov. 2-8, 1924: Cases, 818; deaths, 177.
Bombay	Nov 16-22	1	1	
Calcutta	Nov. 23-29	19	12	
Madras	Nov 23-Dec 6	22	12	
Rangoon	Nov 9-29	15	5	
Indo-China				Aug. 1-31, 1924: Cases, 145; deaths, 54 August, 1923: Cases, 177 (European, 20), deaths, 41 (European, 1).
Province—				
Anam	Aug 1-31	41	9	
Cambodia	do	24	8	
Cochin-China	do	72	30	
Tonkin	do	8	7	
Java:				
Batavia district—				
Buitenzorg	Oct. 21-27	1		
Cheribon district	Oct 21-Nov. 3	12		
Pasoeroean district	Oct. 26-Nov 1	9	1	Supplemental report.
Pekalongan district	Oct. 21-Nov. 3	8		
Soerabaya district	Nov 2-8	72	14	
Mexico:				
Guadalajara	Dec. 23-29		1	
Tampico	Dec. 11-20	2	1	
Vera Cruz	Dec. 21-28		10	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received During Week Ended January 16, 1925—Continued

SMALLPOX—Continued.

Place	Date	Cases	Deaths	Remarks
Portugal:				
Lisbon	Dec. 7-13	9		
Oporto	Nov 30-Dec. 6	2	1	
Russia				Jan. 1-June 30, 1924: Cases, 9,683. Corresponding period, 1923: Cases, 37,240. Officially reported.
Spain:				
Barcelona	Nov. 27-Dec. 10		4	
Madrid	Dec. 14-20		17	
Union of South Africa:				
Cape Province	Nov 9-15			Outbreaks.
Transvaal	do			Do.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Nov 1-30	1		
Egypt:				
Cairo	Oct 22-28	3	2	
Mexico:				
Guadalajara	Dec 23-29		1	
Mexico City	Nov. 29-Dec. 6	14		
Palestine				Nov. 26-Dec. 8, 1924: Cases, 4. In district of Jerusalem
Rumania				
Constanza	Dec 1-10	1		
Russia				Jan 1-June 30, 1924: Cases, 92,000. Corresponding period, 1923 Cases, 215,000.
Turkey:				
Constantinople	Nov 29-Dec. 5		1	
Union of South Africa.				
Cape Province	Nov 9-15			Outbreaks.
Orange Free State	do			Do.
Transvaal	do			Do.
Yugoslavia				
Belgrade	Nov 24-Dec 7	4		

Reports Received From December 27, 1924, to January 9, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon.				
Colombo	Nov 16 22	1		
India				Oct. 19-Nov 1, 1924. Cases, 5,300; deaths, 3,219.
Calcutta	Oct 26-Nov. 15	27	21	
Madras	Nov. 16-22	14	11	
Siam:				
Bangkok	Nov. 19-25	2		

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Ponta Delgada	Dec. 6-12	9	5	
Ceylon:				
Colombo	Nov. 9-22	4	3	One plague rodent.
Ecuador:				
Guayaquil	Nov. 16-30	6	2	Rats taken, 8,802; found infected, 19.

[1] From medical officers of the Public Health Service, American consuls, and other sources. For reports received from June 28 to Dec. 26, 1924, see Public Health Reports for Dec. 26, 1924. The tables of epidemic diseases are terminated semiannually and new tables begun.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to January 9, 1925—Continued

PLAGUE—Continued.

Place	Date	Cases	Deaths	Remarks
Egypt				Jan. 1-Dec. 2, 1924. Cases, 361. Corresponding period, year 1923—cases, 1,448.
City—				
Alexandria	Dec 4	1	1	Bubonic.
Port Said	Dec 1	1	1	
Suez	Dec 3	1	1	
India				Oct. 19-Nov. 1, 1924: Cases, 5,260; deaths, 3,942.
Rangoon	Oct 26-Nov 8	3	4	
Java				
Cheribon	Oct. 14-20		10	
Pekalongan	do		5	
Tegal	do		3	
Madagascar				Oct. 16-31, 1924: Cases, 36; deaths, 33.
Tananarive Province	Oct 16-31	36	33	
Tananarive Town	do	2	2	Bubonic.
Other localities	do	34	31	Bubonic, 15, pneumonic, 7, septicemic, 9.
Straits Settlements.				
Singapore	Nov 9-15	1	1	

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Bolivia				
La Paz	Nov. 1-30	12	7	
British South Africa:				
Northern Rhodesia	Oct 28-Nov 3	24	2	In natives.
Canada:				
British Columbia—				
Vancouver	Dec. 14-20	11		
Manitoba—				
Winnipeg	Dec 7-13	4		
China:				
Amoy	Nov. 9-22			Present.
Antung	Nov. 17-23	1		
Foochow	Nov. 2-8			Do.
Ecuador:				
Guayaquil	Nov. 16-30	2		
Egypt:				
Alexandria	Nov. 12-18	1		
Gibraltar	Dec. 8-14	1		
Great Britain				
England and Wales	Nov. 23-Dec. 6	184		
India				Oct. 19-Nov. 1, 1924 Cases, 1,425; deaths, 326
Bombay	Nov. 2-8	4	3	
Calcutta	Oct. 26-Nov. 15	53	34	
Karachi	Nov. 16-22	2	1	
Madras	do	10	4	
Rangoon	Oct. 26-Nov. 8	17	4	
Iraq:				
Bagdad	Nov. 9-15	1	1	
Java:				
East Java—				
Soerabaya	Oct 19-Nov 1	212	71	
West Java				Oct 26-Nov. 7, 1924: Cases, 2.
Province—				
Batam	Oct. 14-20	2		One locality
Batavia	Nov. 8-14	1		
Cheribon	Oct. 14-20	2		Do.
Pekalongan	Oct 14-20	12		Two localities.
Mexico:				
Mexico City	Nov. 23-29	1		
Vera Cruz	Dec. 1-14		6	
Spain:				
Cadiz	Nov. 1-30		34	
Malaga	Oct 31-Nov. 13		40	
Valencia	Nov. 30-Dec. 6	2		
Syria:				
Aleppo	Nov. 23-29	1		
Tunis:				
Tunis	Nov. 25-Dec. 15	33	23	
Union of South Africa.				
Orange Free State	Nov. 2-8			Outbreaks

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to January 9, 1925—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Bolivia:				
La Paz	Nov. 1-30	2		
Chile:				
Talcahuano	Nov 16-29		4	10 cases (estimated) present Nov. 22.
Valparaiso	Nov. 25		1	
Egypt				
Cairo	Oct. 1-14	3	2	
Mexico.				
Mexico City	Nov 9-29	29		
Palestine	Nov 12-24	3		
Poland				Sept 28-Oct. 4, 1924, Cases, 28; deaths, 1.
Turkey:				
Constantinople	Nov 15-21	3		
Union of South Africa:				
East London	Nov 16-22	1		

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TREASURY DEPARTMENT

PUBLIC HEALTH REPORTS

ISSUED WEEKLY

BY THE UNITED STATES PUBLIC HEALTH SERVICE

VOLUME 40 :: :: NUMBER 4

JANUARY 23 - - 1925

SPECIAL ARTICLES

Studies on the Permeability of Living and Dead Cells

Mortality Summary for 76 Large Cities for 1924

WASHINGTON
GOVERNMENT PRINTING OFFICE
1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen B. J. LLOYD, *Chief of Division*

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CONTENTS

PUBLIC HEALTH REPORTS

VOL. 40 JANUARY 23, 1925 No. 4

STUDIES ON THE PERMEABILITY OF LIVING AND DEAD CELLS

V. THE EFFECTS OF $NaHCO_3$ AND NH_4Cl UPON THE PENETRATION INTO VALONIA OF TRIVALENT AND PENTAVALENT ARSENIC AT VARIOUS H ION CONCENTRATIONS

By MATILDA MOLDENHAUER BROOKS, Associate Biologist, Division of Pharmacology, Hygienic Laboratory, United States Public Health Service

These studies are a continuation of previously reported experiments on the effects of arsenic on the marine alga, *Valonia.* In a former paper (1), plants were exposed for one hour to $NaHCO_3$ solution before treatment with arsenic. This changed the pH of the sap from 6.4 to 5.2 or 5.4, producing an intracellular acidity by an accumulation of free CO_2 in the sap. It was found (2) that on aeration with CO_2 free -NH_3 free air, the sap became more alkaline than normal aerated sap, having changed from pH 6.8 to 8.4. This showed that in addition to free CO_2 basic ions also entered. Exposing the plants to $NaHCO_3$ before placing them in the arsenic solution affected the amount of arsenic entering the plant in the following manner: More arsenic was found in both the sap and the protoplasm when As_2O_5 was used; more arsenic in the sap but less in the protoplasm when As_2O_3 was used. Since the experiment was performed at an external pH of 5.0 only, and the plants were allowed to remain only one hour in the arsenic solution, it was thought of interest to make a more extensive investigation of this subject by studying the effects of exposure at various times up to 22 hours at different H ion concentrations.

In addition, it was thought of interest to produce an intracellular alkalinity and note its effects upon the amount of arsenic found in the cell. Intracellular alkalinity was induced by placing the plants in NH_4Cl solution, which was the method used by Jacobs (3) for *Rhododendron* petals. The writer (4) found that an exposure of one-half hour to NH_4Cl solution produced an intracellular pH of 9.0 in *Valonia* without injury to the cells (as shown by their subsequent viability).

The advantage of using a large single-celled organism like *Valonia* (which can be easily handled in permeability studies) is obvious. Errors such as those which are present in using mass cultures of microorganisms or whole or ground tissues are eliminated. In mass cultures it is not known into what portion of the organism the substance penetrates, as there is no way of separating a microscopic cell

into its constituent parts and analyzing each one; the same is true of whole tissues—only the aggregate of the penetrating substance can be computed, and some of this may have occupied intercellular spaces; whereas the method of analyzing tissue juices has not only these drawbacks, but is also subject to an error of unknown magnitude due to the portion of the substance left behind during extraction. In working with mammalian organs *in vitro*, abnormal conditions must necessarily prevail; while *in vivo* many unknown and uncontrollable factors are present. It is evident that an ideal material would be a simple constructed living cell large enough to be separated easily into its constituent parts which would then be susceptible of separate analysis. This is precisely what we have in the case of the marine alga, *Valonia*. The species employed in this paper was *V. macrophysa* which is smaller than the species *V. ventricosa* used in the former work. (1), (2), (4). However the conclusions obtained by work on these species are broadly identical even if the data are not in all cases in exact quantitative agreement. The Florida species (*V. ventricosa*) is much more delicate than that used in Bermuda (*V. macrophysa*): the wall is thinner and the layer of protoplasm more delicate.[1] *V. macrophysa* grows in clumps rather than singly as does *V. ventricosa*. These clumps can be broken apart into the single plants and used as such.

V. macrophysa is less sensitive than *V. ventricosa* to changes in osmotic pressure, probably owing to the greater thickness of the layer of protoplasm and the wall; this is illustrated by the following experiment: To sea water in which the plants are, distilled water is added, thereby changing the osmotic pressure; *V. ventricosa* will burst in a few seconds, whereas *V. macrophysa* will remain intact for a considerable time before bursting.

An improved method was used in weighing the protoplasm of *V. macrophysa*. After the sap had been pressed out, the wall containing the protoplasm was weighed; then the protoplasm was washed out with distilled water and the wall carefully dried with filter paper and weighed. The difference between these two weights was the weight of the protoplasm. The probable error in the ratio between the mean weights of sap and protoplasm was 6.4 per cent of the mean. This is relatively high, owing to the difficulty in making an absolute separation of sap from the protoplasm. The probable

[1] The ratios by weight of sap to protoplasm and of sap to wall were found to be as follows:

	Sap : protoplasm	Sap : wall
V. ventricosa	164 : 1	257 : 1
V. macrophysa	25.3 ± 1.6 : 1	109 ± 1.6 : 1

error of the ratio between sap and wall is lower (1.6 per cent) because this difficulty is not met in separating the wall from the other constituents.

It is readily seen how much heavier the protoplasm and wall are in *V. macrophysa* than in *V. ventricosa.*

METHOD

The plants were separated into three groups when ready for use. The first group was placed in sea water only, the second group for one hour in sea water containing $NaHCO_3$ (0.03 M), and the third group for one-half hour in sea water containing NH_4Cl (0.04 M). The cells in the last two solutions were carefully rinsed with fresh sea water and dried on filter paper, and three sets were then simultaneously placed in the arsenic solution. The H ion concentrations of the sap of the three sets at the beginning of the experiments were as follows: the first set was normal (pH = 6.4), the second set abnormally acid (5.4 to 5.2), and the third set alkaline (9.0). As is explained later, the pH of the sap returned to normal in most cases during the course of the experiment when plants were in arsenic solution. The initial pH values were not retained.

All pH determinations were done with indicators. The indicated pH of the sea water used was 8.2 at 22° C., cresol red, thymol blue, and borax buffers being used as standards. No correction was made in these tables for salt error because there are no data for the salt errors of the indicators in *Valonia* sap, and it was thought desirable to keep all figures comparable. Other workers (7) have obtained pH 8.2-8.0 at this temperature for water of Bermuda taken from the same locality as that used in these experiments. The figure obtained by the writer agrees with this when the proper correction for salt error is made.

The pH of the sap of *Valonia* as obtained by Crozier (7) was 5.0 to 6.7, the mode being at 6.0 and the average 5.9. These figures were corrected for the salt error in sea water of the indicator used. *Valonia* sap, tested with brom thymol blue and methyl red, by comparison with NaOH and phosphate–NaOH buffers prepared in the Division of Chemistry of the Hygienic Laboratory ordinarily gave an indicator color corresponding to pH 6.4. Whenever the sap of a given cell had a higher pH than this the cell was discarded. Some cells, however, had a slightly lower pH.

The salt error for *Valonia* sap is not known. Corrections, however, could be made by considering the molecular concentration of *Valonia* sap about 0.5 (it is approximately that of sea water). Since, however, there are no data for some of the indicators used, it was thought better to make no corrections. This does not invalidate the conclusions, which are comparative.

The further procedure was as follows: At stated intervals the plants were taken out of the arsenic solution, carefully rinsed to free them of contaminating arsenic, quickly dried on filter paper and pierced with a fine pointed piece of clean glass. The sap, being under pressure, comes out readily and leaves the protoplasm lining the wall. The wall is cut open farther and the protoplasm washed out with sea water or distilled water from a small dropper. The wall thus remains as a clear transparent membrane. These three constituents—the sap, protoplasm and wall—placed in separate crucibles, are dried, incinerated, and analyzed for arsenic according to the Gutzeit method.

The Gutzeit test is described in a previous publication(1). This method is sensitive to 1 mmg. In these experiments from 3 to 5 plants containing from one to two c. c. of sap each were used for each determination. This produced a greater stain on the test paper, enabling one to read the test more accurately. Since all the numbers were reduced to a common unit—mmg. of arsenic per 1 c. c. of sap—the readings recorded here are sometimes less than 1 mmg. and appear as though they were taken below the limit of sensitivity of the test.

In comparing the amounts of arsenic found in the three components of the cell, the actual amounts found in the protoplasm and wall were multiplied by the figures indicating the ratios between the weight of the sap and those of these two components (25.3 for protoplasm and 103 for wall). This gives figures representing the relative concentration of As in each part of the cell.

Both pentavalent and trivalent forms of arsenic were used. In the case of the former, orthoarsenic acid ($As(OH)_3 + \frac{1}{2} H_2O$) was the reagent actually used, but for convenience and clearness this will be designated throughout this paper as As_2O_5, in contrast to As_2O_3, which was used as such.

Arsenic in the form of As_2O_5 or As_2O_3 was dissolved in distilled water and brought to the desired pH by the addition of NaOH. Sea water could not be used as a solvent on account of the precipitation of Mg by NaOH. After NaOH combines with arsenic the resulting sodium salt can be added to sea water without precipitating Mg. The concentration of the solutions used was 0. 002 M in respect to arsenic. The volume of the solution in which the plants were placed was 200 c. c. The temperature varied only slightly from 22° C. All the reagents used were special arsenic-free preparations which were tested and found to contain no arsenic. No arsenic was found in *Valonia* in the control experiments.

The external pH was varied from 5 to 9 and kept constant at any given pH below 8.4 by adding traces of HCl. At pH 8.4 and above, the sodium arsenate and Na arsenite act as buffers, and the pH

remains constant; but at lower pH values there is a tendency to shift to more alkaline reactions. Buffers were not used because of their complicating effects described in a previous paper (1). The internal pH of the cells was also varied, as explained above, by the use of $NaHCO_3$ and NH_4Cl, giving internal acidity and alkalinity respectively. Various combinations of sodium and potassium bicarbonates and arsenates were tried at various external pH values, but no significant differences were found. Since the changes of internal pH are, at most, of a few hours duration, the data must be considered with this point in mind.

All experiments were paralleled by survival tests, the results of which are given in Table 1. The importance of determining whether the plants were injured by treatment with arsenic was discussed in a previous paper (1).

The plants were kept as long as possible in bowls containing sea water, which was renewed every day. Some were kept longer than 30 days; but cells surviving in good condition, i. e., remaining turgid and olive green in color, for this length of time were considered to have been uninjured and were ordinarily discarded. The normal plants survived under laboratory conditions a month or more. Where a shorter time of survival is indicated, injury had probably occurred. Each figure is representative of from six to forty plants.

Normal untreated cells of *V. macrophysa* could be depended upon to live one month or more under laboratory conditions, i. e., in 500 c. c. finger bowls (flat glass dishes) containing sea water, which was renewed daily, while *V. ventricosa* (the species considered in previous papers (1), (2), (4), under the same conditions survived for from ten days to one month.

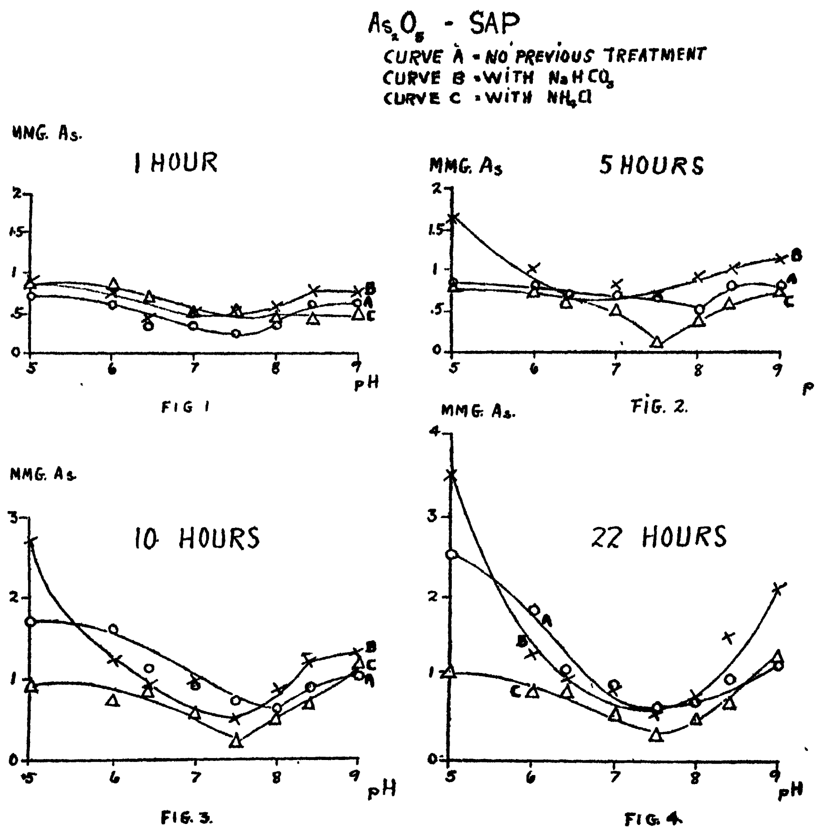
RESULTS

Pentavalent arsenic is less toxic to *Valonia* than trivalent arsenic in the same concentration and at the same H ion concentrations; in fact 22 hours' exposure to trivalent arsenic produced definite evidence of injury, as shown in Table 1, plants treated in this way surviving less than 30 days and in a few cases only a few days after they had been replaced in sea water. Therefore the increased amount of arsenic in cells treated for 22 hours with As_2O_3 may be considered as due at least in part to injury of the cell.

PENETRATION INTO THE SAP

Figures 1 to 16 represent the number of micromilligrams of As found (ordinates) in the sap when the external solution was kept at various pH values (abscissae). There are 4 figures to each set, representing determinations after 1, 5, 10, and 22 hours in the ar-

senic solution. There are three curves for each figure, representing the three H ion concentrations of the internal sap—normal (A); more acid (by treatment with $NaHCO_3$), (B); and alkaline (by treatment with NH_4Cl) (C). Each point on the curve represents the mean of from three to nine experiments on from two to five



FIGS. 1-4.—Number of mmg. of arsenic in the sap of *Valonia* (ordinates) at various H ion concentrations of the external solution (abscissae) after plants had been 1, 5, 10, and 22 hours, respectively, in a solution of pentavalent arsenic (As_2O_5) of 0.002 M in sea water. Curve A, without treatment previous to placing the cells in arsenic; curve B, in $NaHCO_3$ solution (0.03 M) for one hour previous to arsenic treatment; curve C, in NH_4Cl (0.04 M) for one-half hour previous to arsenic treatment.

plants each. The probable error of the mean is less than 6 per cent of the mean. In all the experiments the minimum amount of arsenic was found at an external pH of approximately 7.0 to 7.5. This agrees roughly with the writer's previous work in which the minimum amount of arsenic was found at approximately pH 7.0.

There was one marked difference in the results with trivalent and pentavalent arsenic. In the former case the amount of arsenic penetrating was slightly increased by previous treatment with $NaHCO_3$, and considerably increased by previous treatment with

NH_4Cl. When pentavalent As was used, considerably more arsenic was found in the sap when $NaHCO_3$ was previously used, but considerably less when NH_4Cl was used. These effects represent the mean effect at all pH values, and at all four readings during each experiment, but slight quantitative deviations occur when individual pH values of the external solution or different periods of exposure to these solutions are considered separately—for example at the extreme acid and alkaline ends of the pH range.

$NaHCO_3$ produces a decided increase in the amount of arsenic found when As_2O_5 is used, whereas in the case of As_2O_3 it causes an increase only in the more acid solutions. Table 9 gives the ratios between the amounts of arsenic found when $NaHCO_3$ or NH_4Cl are used and the normal amounts at corresponding pH values of the outside solution.

Table 10 gives a comparison of the ratios of concentrations of arsenic found in cells treated with either $NaHCO_3$ or NH_4Cl as compared with control cells after exposure to arsenic solution. These figures are the averages of all determinations.

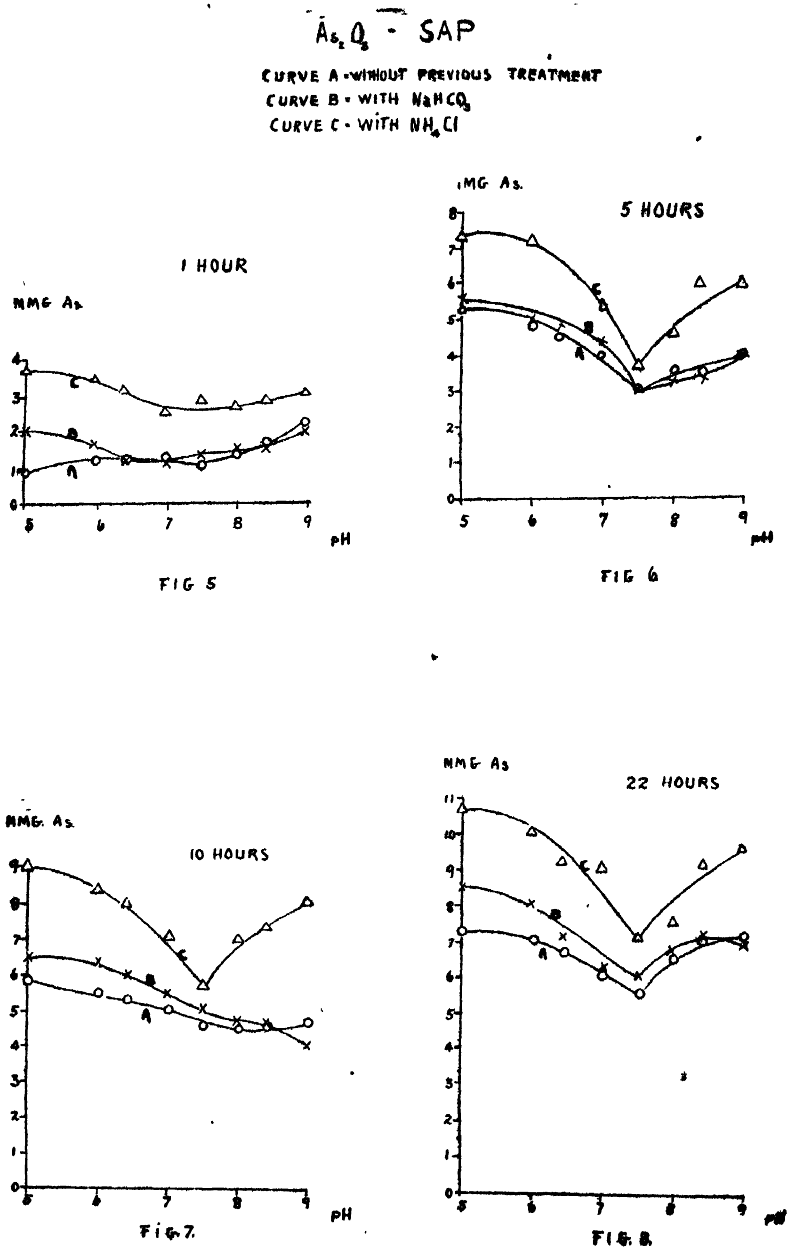
The figures show the following average change in the amounts of As found in the sap: As_2O_3 with $NaHCO_3$, +9 per cent; with NH_4Cl, +66 per cent; As_2O_5 with $NaHCO_3$, +32 per cent; with NH_4Cl, −8 per cent.

It is interesting to note the reversal of the effect of NH_4Cl when As_2O_3 is substituted for As_2O_5. This is most marked when the external solutions are acid, and then mainly after the first five hours.

It is important from the point of view of explaining the observed phenomena to note the change in rate of As penetration during the course of the different experiments. If the rate of penetration changes during the progress of an experiment it can hardly depend on the external pH, which remains constant; and, *vice versa*, if the rate of penetration is constant it could hardly depend on the internal pH, which varies as the experiment goes on.

The progressive changes of internal pH are shown in Table 2, in which the pH of the sap is shown at the time of taking each reading under various conditions of previous treatment and external pH in the experiments represented in the figures.

Previous treatment for one hour with $NaHCO_3$ causes free CO_2 to accumulate in the cell sap so that its pH becomes 5.2 to 5.4, whereas previous treatment for one-half hour with NH_4Cl produces, by the accumulation of NH_3, a pH of 9.0 in the cell sap. When the cells are subsequently placed in alkaline solutions the pH of the sap has in most cases returned to normal within 10 hours. In acid solutions, (pH 5.0) the sap becomes more acid than normal; its pH becomes the same as that of the external solution when this has a pH of 6.0



FIGS. 5-8.—Number of mmg. of arsenic in the sap of *Valonia* (ordinates) at various H ion concentrations of the external solution (abscissae) after plants had been 1, 5, 10, and 22 hours, respectively, in a solution of trivalent arsenic (As_2O_3) of 0.002 M in sea water. Curve A, without treatment previous to placing the cells in arsenic; curve B, in $NaHCO_3$ solution (0.03 M) for 1 hour previous to arsenic treatment; curve C, in NH_4Cl (0.04) for one-half hour previous to arsenic treatment.

or 6.4. These changes are practically independent of the previous treatment, whether with $NaHCO_3$ or NH_4Cl.

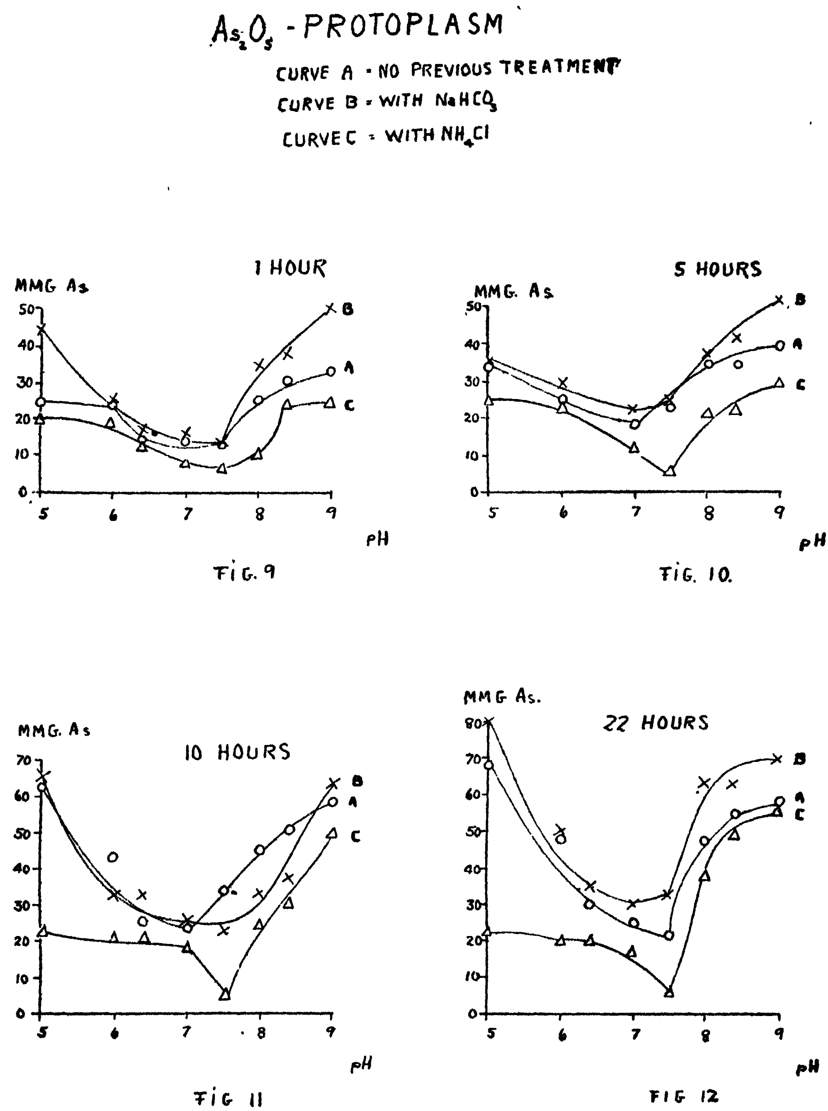
The rate of penetration of arsenic also varied during the progress of most of the experiments. Thus, when NH_4Cl is used, arsenic of the pentavalent type penetrates more slowly at all pH values of the external solutions; during the first hour the difference is insignificant. In acid solutions the difference is very marked; but when alkaline solutions are used the difference gradually diminishes or even vanishes during the progress of the experiment. When trivalent arsenic is used, the rate of penetration is affected in the opposite manner—an increase in the amount of arsenic is evidenced from the first hour. Except in the more alkaline external solutions the difference in As content between the saps of treated and normal cells seems to remain about the same throughout the 22 hours. In other words, it would appear as if the effects of free NH_3 in the sap, which caused the increased penetration of arsenic during the first hour, no longer persisted after the first hour; after that time the rate of penetration was the same as the rate into the control cells, the arsenic content at the same time keeping the initial amount in advance of the normal. In the alkaline external solutions, however, there is some evidence that the increased rate of penetration is maintained throughout a considerable part of the experiment.

$NaHCO_3$, used with As_2O_5, increases the amount of arsenic found in the sap. When acid solutions are used, this increase is apparent at the first reading (1 hour); but alkaline solutions delay the increase, which is apparent only in the last reading (after 22 hours). Between pH's 6.0 and 8.0 $NaHCO_3$ has very little effect. In the case of As_2O_3 there is an increase in the amount of arsenic at pH 5.0 (external solution) which is perceptible at the end of the first hour; after that time there is no further gain; the rate of penetration becomes essentially the same as that into untreated cells. Except at pH 5 the differences in As content, while consistently in favor of cells previously treated with $NaHCO_3$, are almost negligible.

Briefly stated, more arsenic penetrates through the protoplasm into the sap when trivalent arsenic is in the external solution than when pentavalent arsenic is used. This is true in all three conditions which governed the experiments—A, normal; B, with $NaHCO_3$; and C, with NH_4Cl. It is most marked in the alkaline range, and still more so when NH_4Cl is used.

ACCUMULATION IN THE PROTOPLASM

In the protoplasm more arsenic is found when the pentavalent form is used; $NaHCO_3$ increases and NH_4Cl decreases this amount. It would seem, therefore, that pentavalent arsenic unites with or is otherwise led to accumulate in the protoplasm to a greater extent



FIGS. 9-12.—Number of mmg. of arsenic in the protoplasm of *Valonia* (ordinates) at various H ion concentrations of the external solution (abscissae) after plants had been 1, 5, 10, and 22 hours, respectively, in a solution of pentavalent arsenic (As_2O_5) of 0.002 M in sea water. Curve A, without treatment previous to placing the cells in arsenic; curve B, in $NaHCO_3$ solution (0.03M) for 1 hour previous to arsenic treatment; curve C, in NH_4Cl (0.04 M) for one-half hour previous to arsenic treatment.

than trivalent arsenic, except when NH_4Cl is used. Trivalent arsenic appears to filter through rapidly into the sap.

The results are summarized in Table 9, in which are given the ratios of the mean arsenic contents of the protoplasm of cells exposed to solutions of trivalent as compared with pentavalent arsenic. These ratios are given for each of the three types of previous treatment (normal, $NaHCO_3$ and NH_4Cl) under two conditions: External solution acid (pH 5.0–6.0) and external solution alkaline (pH 8.0–9.0). The probable error of the mean is less than 3 per cent of the mean.

It will be seen that the ratios are further from unity when the arsenic is penetrating from acid solutions, whereas the greater differences in As content of the sap were observed when the external solutions were alkaline.

Just what the relation between the pH of the sap and that of the protoplasm is, is not known; but it seems probable that when there is an excess of CO_2 or NH_3 over the normal in the sap, there would also be an excess of free CO_3 or NH_3 in the protoplasm, especially since these substances had to come through the protoplasm to get into the sap.

Table 10 gives the ratios of concentrations of arsenic in the protoplasm of previously treated cells as compared with control cells after exposure to arsenic solutions of different pH values.

The figures for protoplasm show the following average change in the amount of As found in the protoplasm: As_2O_3 with $NaHCO_3$, -2 per cent; with NH_4Cl, $+51$ per cent; As_2O_5 with $NaHCO_3$, $+16$ per cent; with NH_4Cl, -35 per cent.

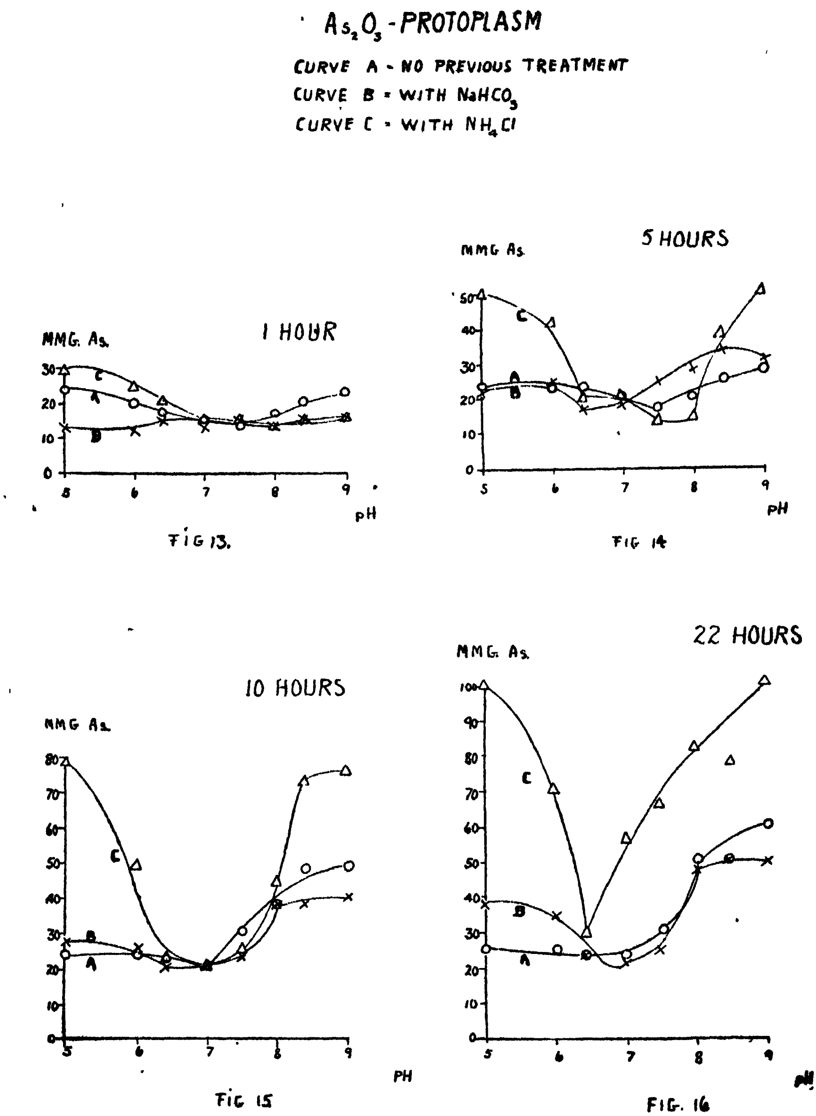
The same reversal of the effect of NH_4Cl on the amount of arsenic in the sap is found in the protoplasm to a more marked degree when trivalent and pentavalent arsenic are substituted for each other. Differences in the effect of $NaHCO_3$ are also apparent.

ARSENIC CONTENT OF THE CELL WALL

Tables 7 and 8 give the data for penetration of both kinds of arsenic into the wall. They suggest the lack of influence of the wall upon the penetration of substances into the interior. No consistent differences are shown and, therefore, no curves are plotted. The numbers given in the tables were obtained by multiplying the experimental figures by 103, the ratio between the weight of the sap and that of the wall, and, hence, indicate the concentrations of As in the same units as those given above for the sap and protoplasm.

GENERAL COMPARISONS

Tables 3 to 6 give the data from which Figures 1 to 20 are computed. Figures 17 to 20 show more clearly how changes in the H ion concentration of the interior of the cell affect the amount of



FIGS. 13–16.—Number of mmg of arsenic in the protoplasm of *Valonia* (ordinates) at various H ion concentrations of the external solution (abscissae) after plants had been 1, 5, 10, and 22 hours, respectively, in a solution of trivalent arsenic (As_2O_3) of 0.002 M in sea water. Curve A, without treatment previous to placing the cells in arsenic; curve B, in $NaHCO_3$ solution (0.03 M) for 1 hour previous to arsenic treatment; curve C, in NH_4Cl (0.04 M) for one-half hour previous to arsenic treatment.

arsenic found in the sap and protoplasm at different external H ion concentrations from pH 5.0 to 9.0. In these diagrams the pH of the sap is given at the time when *Valonia* is placed in the arsenic solution. It must be understood that this gradually changes in the course of an hour (see Table 2). The H ion concentration of the sap was measured by the indicator method, as was stated before, but that of the protoplasm could not be so measured. The pH of the protoplasm is undoubtedly affected by free CO_2 and free NH_3, because these substances have to pass through the protoplasm in order to reach the sap; but, since the constituents of the protoplasm may resist changes of reaction the H ion concentration of the protoplasm would perhaps not always be exactly the same as that of the sap. The difference could hardly be of any great magnitude; the internal pH values for protoplasm are given with this reservation. These values were determined only at the end of the first hour before the internal pH had undergone any great change from its initial value.

There is a decided tendency for more arsenic to penetrate into the sap from a solution of As_2O_3 when the sap is alkaline, and less when it is more acid than normal (Fig. 17). The same general relations between internal pH and arsenic content are valid for protoplasm as long as the external solution has a pH of 7.0 or less. At 7.5 there is no effect of internal pH, and in more alkaline solutions the arsenic content decreases with increasing internal pH (Fig. 18).

When pentavalent arsenic is used the amount of arsenic found in the sap is greater when the internal pH is either above or below normal, except when the external solution is alkaline (pH 8.4 and 9.0). This is shown in Figure 19. In these last two curves there is less arsenic found when the internal pH and the external pH are both alkaline.

The amount of arsenic found in the protoplasm of cells exposed to solutions of As_2O_5 decreases decidedly when the sap is alkaline, and increases decidedly when the sap is more acid than normal.

In general, then, pentavalent arsenic penetrates better when the sap is acid, and trivalent arsenic penetrates better when the sap is alkaline; but when the external solution is alkaline, the effects of internal alkalinity are greatly affected. This is noticeable in the case of As_2O_3–sap (Fig. 17) in which case the difference in As content of the sap at the internal pH values 7.0 and 9.0, for example, is greatly decreased; it is particularly striking in the cases of As_2O_3–protoplasm and As_2O_5–sap where an increase is turned into a decrease (Figs. 18, 19), and is seen as a reenforcement of the effects of internal pH in the case of As_2O_5–protoplasm (Fig. 20), where alkalinity of the sap already acts to hinder the accumulation of arsenic.

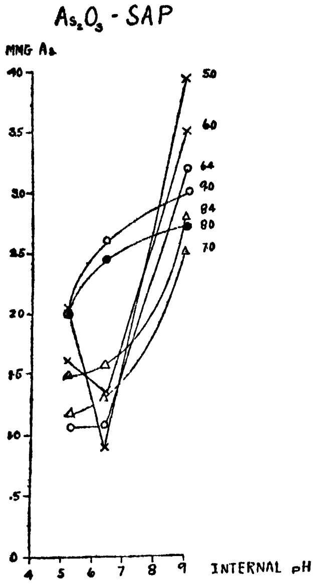


FIG. 17.

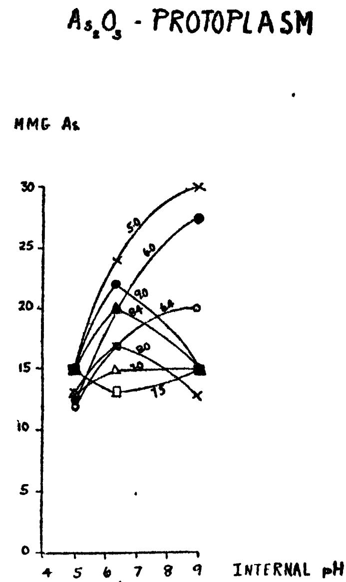


FIG 18.

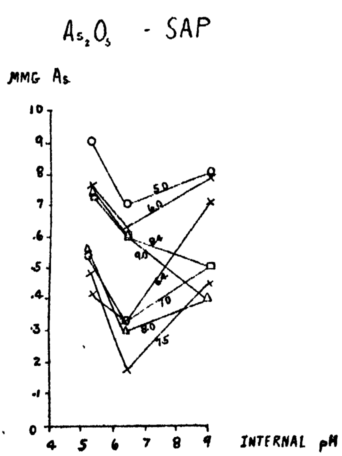


FIG 19

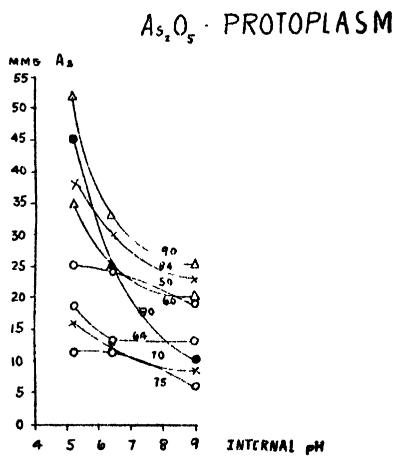


FIG 20.

FIG. 17.—Number of mmg. of arsenic (ordinates) in the sap of *Valonia* when the internal pH is varied (abscissae), at the same time keeping the pH of the external solution constant (numbers on the curves). Plants remained 1 hour in the trivalent arsenic solution of 0.002 M in sea water before being tested for arsenic.

FIG. 18.—Number of mmg. of arsenic (ordinates) in the protoplasm of *Valonia* when the internal pH is varied (abscissae), at the same time maintaining a constant external pH (numbers on the curves). Plants remained 1 hour in the trivalent arsenic solution 0 002 M in sea water before being tested.

FIG. 19.—Number of mmg. of arsenic (ordinates) in the sap of *Valonia* when the internal pH is varied (abscissae), at the same time maintaining a constant external pH (numbers on the curves). Plants remained 1 hour in the pentavalent arsenic solution of 0.002 M in sea water before being tested.

FIG. 20 —Number of mmg. of arsenic (ordinates) in the protoplasm of *Valonia* when the internal pH is varied (abscissae), at the same time maintaining a constant external pH (numbers on the curves). Plants remained for 1 hour in the pentavalent arsenic solution of 0.002 M in sea water before being tested for arsenic.

DISCUSSION

Since the changes in internal pH are only temporary, it is of interest to analyze the data with a view to determining whether the increased arsenic contents recorded for the later readings are the result of a continuous gain compared with the normal, or whether they are only the result of a "head start" obtained before the effects of the $NaHCO_3$ or NH_4Cl had disappeared. In most cases it certainly seems as if the initial increase or decrease were not permanent, i. e., that the effects due to $NaHCO_3$ or NH_4Cl were only temporary; but the rate of penetration of arsenic from an As_2O_3 solution into the protoplasm of cells previously treated with NH_4Cl seems to remain for some time in excess of the normal rate. Since data are not consistent in this respect, no generalization can be made as to whether the observed effects are immediate results of the presence of NH_3 and CO_2 or whether they are of a secondary nature.

The data are also to be examined from the point of view of possible correlation between arsenic penetration and pH. Three determinants at least are to be considered: first the effect of the pH of the external solution on the concentration of undissociated acid, and of arsenate and arsenite anions in the solution bathing the cell; second the effects of the internal pH on the amount of free, undiffusible, weak base available in the protoplasm to combine with and hold the arsenic anion; third, possible effects of the pH on the viscosity or some other property of protoplasmic constituents of an ampholytic type. This should produce an inflection in the curve representing arsenic content as a function of pH, the inflection corresponding to an isoelectric point or region.

(*a*) EXTERNAL pH

Crane (5) has studied the toxicity of various alkaloids to *Paramecium* and found that those having comparatively large dissociation constants varied in toxicity with changes in H ion concentration in such a way as to indicate that the effect of hydrogen ions upon toxicity is due to an action upon the drug rather than upon the cell itself. Crane attributes the effects of the drugs to the undissociated free base, which in the case of alkaloids with high dissociation constants, becomes greater in amount as the H ion concentration is decreased. It has been suggested that the differences in penetration of the two acids of arsenic at various H ion concentrations is likewise due to differences in dissociation of these acids at different H ion concentrations of the solution bathing the cells.

The influence of the H ion concentration upon the dissociation of arsenic and arsenious acids may be deduced from the following equations:

If we have an acid, HA, with a dissociation constant K_a, then

$$\frac{(A^-) \times (H^+)}{(H\,A)} = K_a$$

where A^- and H^+ are the anion and hydrogen ion, respectively, and brackets denote concentration of the substance indicated, or

$$\frac{(H^+)}{K_a} = \frac{(HA)}{(A^-)}$$

Since the salts of the acids with strong bases may be regarded as being completely dissociated, we may consider that all the arsenic in the solution is in the form of either HA or A^-, the undissociated salt BA being negligible in amount, and

$$(A^-) + (HA) = 1$$

The first dissociation constants of these two acids are 5×10^{-3} for arsenic (8) and 6×10^{-6} for arsenious (9.) The second and third dissociation constants are so small that they may be neglected. Substituting into the above equations these values and assuming different values of (H) we may calculate the proportions of dissociated and undissociated acid at the extreme H ion concentrations used, pH 5.0 and pH 9.0:

	pH 5.0	pH 9.0
Arsenate anion	0.998	0.999+
Undissociated arsenic acid	.002	.0000002
Arsenite anion	.37	.999+
Undissociated arsenious acid	.63	.00017

Practically all of the arsenic of arsenic acid is in the form of the dissociated anion at both H ion concentrations indicated, and therefore at all intermediate H ion concentrations. It follows that if the penetration of arsenic acid into *Valonia* depended upon the dissociation of the acid alone, the curves showing arsenic penetration as a function of pH should form a straight line. The figures show that this is not the case—the curves all have minimum penetration at pH values near neutrality. The curves suggest rather the result of an isoelectric point or region. Therefore the dissociation of the acid can not be the principal factor responsible for the rate of penetration of arsenic acid.

In the case of arsenious acid less of the acid is dissociated at pH 5.0 (37 per cent) than at pH 9.0 (99 per cent). If the penetra-

tion of arsenious acid depended upon the amount of arsenite ion present, then one ought to find three times as much arsenic penetrating at pH 9.0 as at pH 5.0. The sap never shows any such effect, and the protoplasm shows it only after the first five hours. It is obvious that the evidence is against the hypothesis that only undissociated acid penetrates. The presence in the curves of a minimum near the neutral point suggests again the influence of an isoelectric point or region. We may conclude, therefore, that the pH of the external solution does not produce its characteristic effects by influencing the dissociation of these two acids, but rather through some intermediary effect upon the protoplasm. If there is any effect at all in the case of As_2O_3, it is effectively concealed by other more important factors.

(*b*) INTERNAL pH

The second possible determining factor to be considered is the effect of internal pH on cell constituents.

McCutcheon and Lucke (6) investigated the effects upon the penetration of dyes of changes of both internal and external hydrogen ion concentrations. When the interior of the cells was alkaline, alkaline dyes penetrated less rapidly than when the cells retained their normal acidity, even if the external solutions were of the same alkalinity in both cases. When the internal H ion concentration was increased, however, by free CO_2, even more dye was present than in normal sap. They conclude from this that a basic dye combines with some acid substance of the protoplasm which is an ordinary acid rather than an ampholyte.

In the experiments of the writer the anion rather than a cation is to be considered. If the above theory is applied, more arsenic should be found when the interior of the cell is alkaline rather than acid. This is the case when arsenious acid is used and when the external pH of the surrounding solution is 6.0 to 9.0, but not when it is 5.0.

Arsenic acid does not conform at all to this hypothesis, because less arsenic is found in both protoplasm and sap when they are made more alkaline.

The explanation invoked by McCutcheon and Lucke to explain their results is inadequate in the case of arsenic. This leaves us with only the third possibility, namely, that the internal pH affects some physical property of a cell constituent or constituents of an ampholytic nature, thus leading to the presence of a minimum in the experimental curves, which minimum corresponds to an isoelectric point or region.

However, since the isoelectric points of most of the recognized ampholytes of the type present in plants lie at a lower pH than the

minima found in these experiments on arsenic (pH 4.5—5.5 rather than 7.0), the position of this minimum may be affected by something besides the ampholytes. This may possibly be a result of the presence of a weak base acting in a way analogous to the action of the weak acid in McCutcheon and Lucke's theory.

SUMMARY

The differences in the penetration of trivalent and pentavalent arsenic into *Valonia* under various conditions led to the following conclusions:

1. When *Valonia* is placed in solutions of arsenic at various H ion concentrations, the concentration of arsenic found in the sap is less than that in the protoplasm. With trivalent arsenic the difference is less than with pentavalent arsenic.
2. The minimum amount of arsenic penetrates into the sap and the protoplasm when the external arsenic solution is approximately neutral.
3. When free CO_2 is allowed to accumulate in the plant, and the plants are then placed in pentavalent arsenic solutions of various H ion concentrations, more arsenic is found in both the sap and the protoplasm than in normal plants placed in similar arsenic solutions. When trivalent arsenic is used instead, the concentration of arsenic in the sap is increased, whereas that in the protoplasm is decreased.
4. When free NH_3 is allowed to accumulate in the plants and the plants are then placed in pentavalent arsenic solutions of various H ion concentrations, less arsenic is found in the sap and the protoplasm than in normal plants placed in similar arsenic solutions. When trivalent arsenic is used instead, more arsenic is found in the sap and in the protoplasm than in normal plants placed in similar arsenic solutions.
5. The pH of the external solution, as well as that of the inside of the plant, affects the rate of penetration of pentavalent and trivalent arsenic. When either or both the external or internal pH values are low, more pentavalent and less trivalent arsenic is found in the protoplasm and in the sap; the opposite is true when the external solution and the interior of the cell are alkaline.
6. There is no difference in the amount of As found in the wall under varying conditions; apparently the wall does not affect the rate of penetration of As into the protoplasm and the sap.
7. It has been shown that—

(*a*) Differences in the rate of penetration of arsenic as influenced by changes in external pH, can not be explained by attributing them to dissociation of the acids and subsequent effect on the arsenic in the external solution.

(b) These differences in the rate of penetration seem to be due to effects on the protoplasm initiated by changes in both the internal pH of the cell and the pH of the bathing solution.

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TABLE 1.—*Number of days of survival of Valonia after exposure to arsenic in sea water*

Previous treatment with	Seawater		Seawater + $NaHCO_3$ (0.03 M)		Seawater + NH_4Cl (0.04 M)		Normal
Hours in solution	10	22	10	22	10	22	
PENTAVALENT							
pH of As solution:							
5.0		35		45	40	30	
6.0						30	
6.4		39		40		30	
7.0		37		38	30	6	
7.5		30		39		30	
8.0		70		60		40	
8.4		40		40		40	30 days.
9.0		39		40	30	20	
5.0	10	1	10	4	3	2	
6.0		30		30		30	
6.4	35	10	30	3	35	6	
7.0	50	15	30	4	30	0	
7.5	30	10	33	2	3	2	
8.0	34	2	32	10	28	3	
8.4	30	2	30	4	30	4	
9.0	30	4	30	5		30	

TABLE 2.—*pH of the sap of Valonia after exposure to arsenic in sea water*

Previous treatment	Seawater					Seawater + $NaHCO_3$ (0.03 M)					Seawater + NH_4Cl (0.04 M)				
Hours in solution	0	1	5	10	22	0	1	5	10	22	0	1	5	10	22
						With As_2O_5									
pH of arsenic solution:															
5.0	6.4	5 2	5.4	5.2	5.4	5.2	5.5.	5.3	5.2	-----	9.0	5.8	5.8	5.2	5.0
6.0	6 4	6.0	5 4	5.4	5.4	5.2	-----	-----	-----	-----	9.0	6.8	6.2	6.0	6.0
6.4	6 4	6 4	6 4	6.4	6 4	5.2	6.4	6.4	6.4	6.4	9.0	6.4	6.4	6.4	6.4
7.0	6.4	-----	-----	-----	6.4	5.2	-----	-----	-----	-----	9.0	6.8	5.8	6.0	6.2
7.5	6.4	6.4	6 4	6.4	6.4	-----	-----	-----	-----	-----	9.0	-----	-----	7.8	7.6
8.0	6.4	6.2	6.4	6.4	6.4	5.2	-----	-----	-----	-----	9.0	6.8	6.2	6.4	6.4
8.4	6 4	6.4	6.4	6.2	6.4	5.2	-----	-----	-----	-----	9.0	6.8	6.4	6.4	6.4
9.0	6.4	6.4	6.4	6.4	6.4	5.2	6.4	6.2	6.4	6.4	9.0	7.0	6.8	6.4	6.4
						With As_2O_3									
5.0	6.4	6.0	5.5	5.2	5.2	5.2	5.2	5.2	5.2	5.0	9.0	6.6	5.4	5.0	5.0
6.0	6.4	6.2	6.0	6.0	6.0	5.2	5.8	6.0	6.0	6.0	9.0	6.8	6.0	6.0	6.0
6.4	6.4	6.4	6.4	6.4	6.4	5.2	6.0	5.8	6.0	6.4	9.0	6.8	6.2	5.8	6.4
7 0	6.4	6.4	6.2	6.2	6.4	5.2	6.2	5.6	6.0	6.4	9.0	6.8	6.8	6.0	6.6
7.5	6.4	6.4	6 4	6.4	6.4	5.2	6.0	6.4	6.4	6.4	9.0	6.8	6.0	6.4	6 6
8.0	6.4	6.4	6 2	6.4	6 4	5.2	6 0	6.0	6.4	6.4	9.0	6.8	6.6	6.4	6.4
8.4	6.4	6.4	6.4	6.4	6 4	5.2	5.8	6 0	6 6	6.6	9.0	7.0	6.0	6.4	6.4
9.0	6.4	6.4	6.4	6.4	6 4	5.2	6.4	5.7	6.4	6.4	9.0	7.0	6.0	6.0	6.6

TABLE 3.—*Arsenic content of sap of cells treated with As_2O_5 solution*

A = Normal.
B = Previous exposure to seawater + $NaHCO_3$
C = Previous exposure to seawater + NH_4Cl.

Hours in solution		1		5		10		22	
		Mmg. As/gm. sap	Relative concentration, A = 1.00	Mmg. As/gm. sap	Relative concentration, A = 1.00	Mmg. As/gm. sap	Relative concentration, A = 1.00	Mmg. As/gm. sap	Relative concentration, A = 1.00
pH									
5.0	A	0.7	1	0.8	1	1.7	1	2.5	1
	B	.9	1 28	1.6	2	2.7	1.59	3.5	1.4
	C	.8	1.14	.87	1	.9	.53	1.1	.44
6.0	A	.63	1	.8	1	1.6	1	1.8	1
	B	.77	1.22	1.0	1.25	1.2	.75	1.3	.72
	C	.8	1.27	.77	.96	.7	.44	.8	.44
6.4	A	.32	1	.73	1	1.1	1	1.1	1
	B	.41	1.28	.59	.81	.9	.82	1.0	.91
	C	.71	2.2	.62	.85	.8	.73	.8	.73
7.0	A	.33	1	.57	1	.97	1	.93	1
	B	.54	1.63	.84	1.47	.97	1	.93	1
	C	.5	1.52	.5	1	.62	.64	.55	.58
7.5	A	.16	1	.73	1	.7	1	.66	1
	B	.48	3 00	.66	.9	.5	.72	.55	.83
	C	.45	2.8	.1	1.37	.2	.28	.23	.35
8.0	A	.30	1	.49	1	.64	1	.69	1
	B	.56	1.86	.9	1.83	.85	1.33	.75	1.1
	C	.4	1.33	.4	.82	.5	.78	.5	.72
8.4	A	.6	1	.8	1	.9	1	1.0	1
	B	.75	1.25	1.0	1.25	1.2	1.34	1.5	1.5
	C	.4	.66	.6	.75	.68	.75	.71	.71
9.0	A	.6	1	.8	1	1.0	1	1.2	1
	B	.75	1.25	1.2	1.5	1.3	1.3	2.1	1.75
	C	.5	.83	.75	.94	1.2	1.2	1.3	1.09

TABLE 4.—*Arsenic content of sap of cells treated with As_2O_3 solution*

A = Normal.
B = Previous exposure to seawater + $NaHCO_3$
C = Previous exposure to seawater + NH_4Cl.

Hours in solution		1		5		10		22	
		Mmg. As/gm. sap	Relative concentration, A = 1.00	Mmg. As/gm. sap	Relative concentration, A = 1.00	Mmg. As/gm. sap	Relative concentration, A = 1.00	Mmg. As/gm. sap	Relative concentration, A = 1.00
pH									
5.0	A	0.91	1	5.2	1	5.9	1	7.2	1
	B	2.1	2.3	5.5	1.05	6.5	1.1	8.5	1.18
	C	3.8	4.2	7.4	1.41	9.0	1.52	10.6	1.48
6.0	A	1.2	1	4.8	1	5.5	1	7.0	1
	B	1.7	1.4	5.0	1.04	6.4	1.16	8.0	1.14
	C	3.5	2.9	7.2	1.5	8.4	1.53	10.0	1.42
6.4	A	1.1	1	4.5	1	5.3	1	6.6	1
	B	1.1	1	4.8	1.07	6.0	1.13	7.0	1.06
	C	3.3	3.0	6.2	1.38	8	1.5	9.2	1.39
7.0	A	1.3	1	4	1	4.8	1	6.0	1
	B	1.2	.92	4.5	1.1	5.5	1.14	6.2	1.03
	C	2.5	1.92	5	1.25	7	1.45	9	1.5
7.5	A	1	1	3	1	4.5	1.0	5.5	1
	B	1.4	1.4	3	1	5.0	1.1	6.0	1.09
	C	2.9	2.9	3.6	1.2	5.6	1.24	7.0	1.28
8.0	A	2.4	1	3.5	1	4.4	1	6.5	1
	B	2.0	.83	3.2	.91	4.7	1.07	6.6	1
	C	2.7	1.1	4.6	1.3	7.0	1.6	7.5	1.15
8.4	A	1.6	1	3.5	1	4.6	1	7.0	1
	B	1.5	.94	3.4	.98	6.0	1.3	7.1	1
	C	2.8	1.75	6.0	1.7	7.3	1.59	9.1	1.3
9.0	A	2.7	1	4.0	1	4.5	1	7.0	1
	B	2.0	.74	4.0	1	4.0	.89	6.9	.99
	C	3.0	1.1	6.0	1.5	8.0	1.77	9.5	1.35

TABLE 5.—*Arsenic content of protoplasm of cells treated with As_2O_5 solution* [1]

A = Normal
B = With $NaHCO_3$
C = With NH_4Cl

Hours in solution		1		5		10		22	
		Mmg. As/gm. of protoplasm	Relative concentration, A = 1.00	Mmg. As/gm. of protoplasm	Relative concentration, A = 1.00	Mmg. As/gm. of protoplasm	Relative concentration, A = 1.00	Mgm. As/gm. of protoplasm	Relative concentration, A = 1.00
pH									
5.0	A	25	1	35	1	63	1	68	1
	B	45	1.8	35	1	66	1.04	80	1.18
	C	20	.8	25	.71	23	.36	23	.34
6.0	A	24	1	25	1	43	1	48	1
	B	25	1.04	30	1.2	33	.77	50	1.04
	C	19	79	24	.96	21	.49	20	.42
6.4	A	13	1	19	1	25	1	30	1
	B	17	1.3	20	1.05	33	1.32	35	1.16
	C	13	1	16	.84	21	.84	20	.66
7.0	A	13	1	18	1	23	1	25	1
	B	16	1.23	23	1.28	25	1.09	30	1.2
	C	8	.6	12	.67	18	.78	18	.72
7.5	A	12	1	23	1	33	1	21	1
	B	12	1	25	1.09	23	.7	33	1.57
	C	6	.5	5	.22	5	.15	6	.29
8.0	A	25	1	35	1	45	1	48	1
	B	35	1.4	38	1.08	33	.73	63	1.3
	C	10	.4	21	.6	25	.56	38	.79
8.4	A	30	1	35	1	50	1	55	1
	B	38	1.26	43	1.22	38	.76	63	1.14
	C	24	8	23	.67	30	.6	50	.91
9.0	A	33	1	40	1	58	1	58	1
	B	53	1.6	53	1.32	63	1.08	70	1.2
	C	25	.76	30	.75	50	.86	66	1.14

[1] Mmg. As/gm. of protoplasm were calculated on the basis of the observed average ratio of sap to protoplasm, which was 25.3.

TABLE 6.—*Arsenic content of protoplasm of cells treated with As_2O_5 solution* [1]

A = Normal
B = With $NaHCO_3$
C = With NH_4Cl

Hours in solution		1		5		10		22	
		Mmg. As/gm. of protoplasm	Relative concentration, A=1.00	Mmg. As/gm. of protoplasm	Relative concentration, A=1.00	Mmg. As/gm. of protoplasm	Relative concentration, A=1.00	Mmg. As/gm. of protoplasm	Relative concentration, A=1.00
pH									
5.0	A	24	1	24	1	24	1	25.3	1
	B	12.5	1.9	22	.92	28	1.16	38	1.5
	C	30	1.25	58	2.4	79	3.3	101	4.0
6.0	A	20	1	23	1	24	1	25	1
	B	12	.6	25.3	1.05	25	1.03	35	.72
	C	25	1 25	41	1.78	48	2	70	2.8
6.4	A	17	1	23	1	23	1	23	1
	B	15	.88	17.7	.77	20	.87	23	1
	C	20	1.18	19.7	.86	23	1	28	1.2
7.0	A	15	1	20	1	20	1	23	1
	B	13	.87	17.7	.88	20	1	21	.92
	C	15	1	19	.95	20	1	56	2 4
7.5	A	13	1	17.7	1	30	1	30	1
	B	15	1 15	25.3	1.42	23	.77	25	.83
	C	15	1.15	13	.73	25.3	.84	66	2.2
8.0	A	17	1	20	1	38	1	50	1
	B	13	.76	28	1.4	38	1	48	.96
	C	13	.76	14	.7	45	1.18	83	1.67
8.4	A	20	1	25	1	48	1	50	1
	B	15	.75	33	1.32	38	.79	50	1
	C	15	.75	38	1.52	73	1.52	78	1.55
9.0	A	23	1	28	1	48	1	60	1
	B	15	.65	30	1.07	40	.83	50	.83
	C	15	.65	50	1.78	76	1 58	101	1.68

[1] Mmg. As/gm. of protoplasm were calculated on the basis of the observed average ratio of sap to protoplasm, which was 25.3.

TABLE 7.—*Number of micromilligrams of arsenic in wall of cells treated with As_2O_5 solution* [1]

A = Normal.
B = Previous exposure to sea water + $NaHCO_3$.
C = Previous exposure to sea water + NH_4Cl.

Hours in solution		1	5	10	22
pH					
5.0	A	73	75	57	48
	B	32	58	38	55
	C	61	33	48	20
6.0	A	40	43	56	53
	B	40	18	0	55
	C	35	41	37	41
6.4	A	59	57	73	53
	B	28	30	0	36
	C	33	32	32	33
7.0	A	33	28	31	33
	B	38	64	35	35
	C	51	31	51	57
7.5	A	33	30	28	34
	B	25	27	26	28
	C	19	17	39	21
8.0	A	33	36	78	36
	B	21	51	52	67
	C	64	44	44	75
8.4	A	38	51	44	42
	B	26	31	60	51
	C	48	60	70	72
9.0	A	42	36	57	68
	B	39	50	70	50
	C	67	60	60	65

[1] Mmg. As/gm. of wall were calculated on the basis of the observed average ratio of sap to wall, which was 103.

Table 8.—*Number of micromilligrams of arsenic in wall of cells treated with As_2O_3 solution* [1]

A = Normal
B = Previous exposure to sea water + $NaHCO_3$
C = Previous exposure to sea water + NH_4Cl

Hours in solution		1	5	10	22
pH					
5.0	A	41	41	36	78
	B	36	31	31	61
	C	30	45	39	37
6.0	A	21	31	51	51
	B	28	31	31	33
	C	31	35	40	30
6.4	A	32	33	33	48
	B	38	20	35	51
	C	68	32	67	54
7.0	A	36	32	32	33
	B	34	33	42	44
	C	29	48	65	27
7.5	A	34	44	30	45
	B	36	25	30	22
	C	40	27	38	35
8.0	A	36	35	59	50
	B	35	45	36	45
	C	32	58	38	15
8.4	A	39	35	26	28
	B	38	31	30	23
	C	16	32	32	80
9.0	A	28	30	30	33
	B	31	35	28	30
	C	34	30	31	51

[1] Mmg. As/gm of wall were calculated on the basis of the observed average ratio of sap to wall, which is 103.

Table 9.—*Ratios of concentration of trivalent arsenic in cells variously treated, to that of pentavalent arsenic in similarly treated cells—Average of all determinations*

pH of As solution	Sap of cells previously treated with—			Protoplasm of cells treated with—		
	Control	$NaHCO_3$	NH_4Cl	Control	$NaHCO_3$	NH_4Cl
5.0–6.0	3.65	3.35	9.04	0.57	0.54	2.52
8.0–9.0	5.78	4.08	13.40	0.83	0.69	1.00

Table 10.—*Ratios of concentrations of arsenic in previously treated as compared with control cells after exposure to arsenic solutions of different pH—Averages of all determinations*

Type of As	As_2O_3		As_2O_5	
Previous treatment	$NaHCO_3$	NH_4Cl	$NaHCO_3$	NH_4Cl
Sap	1.09	1.66	1.32	0.92
Protoplasm	0.98	1.51	1.16	0.65

Examination for Entrance into the Regular Corps of the United States Public Health Service

Examinations of candidates for entrance into the regular corps of the United States Public Health Service will be held at the following-named places on the dates specified:

Washington, D. C., March 2, 1925.
Chicago, Ill., March 2, 1925.
New Orleans, La., March 2, 1925.
San Francisco, Calif., March 2, 1925.

Candidates must be not less than 23 nor more than 32 years of age, and they must have been graduated in medicine at some reputable medical college, and have had one year's hospital experience or two years' professional practice. They must pass satisfactorily oral, written, and clinical tests before a board of medical officers and must undergo a physical examination.

Successful candidates will be recommended for appointment by the President, with the advice and consent of the Senate.

Requests for information or permission to take this examination should be addressed to the Surgeon General, United States Public Health Service, Washington, D. C.

MORTALITY SUMMARY FOR 76 LARGE CITIES

Deaths from all causes, death rates, and infant mortality in 76 large cities of the United States for 1924 and comparison with 1923

[From the Weekly Health Index, Bureau of the Census, Department of Commerce]

City [1]	Total deaths	Death rate [2]	Deaths under 1 year	Provisional infant mortality rate 1924 [3]	Infant mortality rate 1923	Mortality data for calendar year, 1923		
						Total deaths	Death rate	Deaths under 1 year
Total (65 cities)	336,229	12.5	42,548	[4] 71	[4] 77	344,048	13.0	44,894
Akron [5]	1,512	--------	273	58	66	1,702	--------	323
Albany	1,816	15.4	173	74	90	1,899	16.2	206
Atlanta [6]	4,109	18.1	546	--------	--------	4,025	18.1	613
Baltimore	11,176	14.3	1,469	83	86	11,589	15.0	1,500
Birmingham [6]	3,331	16.7	468	--------	--------	3,053	15.6	469
Boston	10,858	14.1	1,446	74	82	11,509	14.9	1,571
Bridgeport [5]	1,514	--------	181	55	80	1,042	--------	261
Buffalo	6,913	12.7	1,074	84	90	7,269	13.5	1,110
Cambridge	1,425	12.8	164	54	72	1,527	13.7	219
Camden	1,726	13.7	291	92	89	1,806	14.5	282
Canton	1,017	10.0	191	78	62	1,030	10.4	148
Chicago	32,647	11.2	4,484	76	87	33,764	11.7	4,885
Cincinnati	6,158	15.2	671	76	80	6,527	16.1	666
Cleveland	9,218	10.2	1,360	65	67	9,593	10.8	1,383
Columbus	3,513	13.2	358	65	76	3,983	15.3	416
Dallas [6]	2,404	12.9	396	--------	--------	2,173	11.9	375
Dayton	1,820	10.8	235	73	79	1,950	11.8	249
Denver [5] [6]	4,104	--------	513	--------	--------	3,997	--------	473
Des Moines	1,586	11.0	135	45	--------	1,601	11.4	194
Detroit [5]	12,747	--------	2,857	77	87	13,051	--------	2,442
Duluth	1,010	9.4	135	55	73	1,075	10.1	174
Erie [5]	1,270	--------	168	63	68	1,347	--------	171
Fall River	1,579	13.1	334	93	92	1,655	13.7	337
Flint [5]	945	--------	223	71	98	1,285	--------	299
Fort Worth	1,283	8.7	156	--------	--------	1,197	8.3	159
Grand Rapids	1,516	10.3	167	50	63	1,714	11.7	210

[1] Cities appearing in the summary are those shown for the 52 weeks in the Weekly Health Index.
[2] Allowance has been made for the two extra days, which must be added to the 52 weeks to give a period of 366 days.
[3] Infant mortality rate is based upon deaths under 1 year as returned each week and estimated births, 1924.
[4] Infant mortality rate for the cities in the birth registration area, appearing in the summary.
[5] Mortality rates are omitted, pending the establishment of more satisfactory estimates of population.
[6] Cities for which no infant mortality rate is given are not in the registration area for births.

Deaths from all causes, death rates, and infant mortality in 76 large cities of the United States for 1924 and comparison with 1923—Continued

City	Total deaths	Death rate	Deaths under 1 year	Provisional infant mortality rate 1924	Infant mortality rate 1923	Mortality data for calendar year, 1923: Total deaths	Death rate	Deaths under 1 year
Houston [5] [6]	2, 181	....	291	....	....	2, 058	....	257
Indianapolis	4, 581	13. 1	546	73	86	4, 926	14. 4	612
Jacksonville, Fla	1, 785	17. 5	221	95	....	1, 726	17. 3	209
Jersey City	3, 985	12. 8	558	75	76	3, 708	12. 0	558
Kansas City, Kans	1, 530	12. 6	185	75	97	1, 727	14. 9	263
Kansas City, Mo.[6]	4, 785	13. 4	603	....	....	5, 057	14. 4	632
Los Angeles [6]	11, 300	....	1, 226	66	72	10, 750	....	1, 210
Louisville	3, 877	15. 1	425	72	90	4, 186	16. 2	506
Lowell	1, 543	13. 4	276	93	107	1, 680	14. 6	311
Lynn	1, 128	10. 9	123	63	79	1, 201	11. 7	156
Memphis [6]	3, 430	20. 0	429	....	....	3, 388	19. 9	422
Milwaukee	4, 716	9. 6	753	66	79	5, 227	10. 8	866
Minneapolis [7]	4, 641	11. 2	495	51	54	4, 553	11. 1	526
Nashville [6]	2, 340	19. 1	292	....	....	2, 281	18. 6	255
New Bedford	1, 326	10. 1	246	79	106	1, 584	12. 2	349
New Haven	2, 111	12. 1	288	72	74	2, 181	12. 6	294
New Orleans [6]	7, 531	18. 5	836	....	....	7, 157	17. 7	763
New York	70, 623	11. 8	8, 733	67	67	69, 552	11. 7	8, 578
Bronx Borough	8, 001	9. 2	771	51	56	7, 586	9. 0	836
Brooklyn Borough	23, 513	10. 8	3, 158	64	60	23, 947	11. 1	2, 932
Manhattan Borough	31, 367	13. 9	3, 977	77	76	30, 376	13. 4	3, 936
Queens Borough	5, 592	10. 1	629	60	67	5, 960	11. 1	696
Richmond Borough	2, 150	16. 5	198	69	62	1, 683	13. 2	178
Newark, N. J	4, 906	11. 1	726	64	68	5, 110	11. 6	752
Norfolk	1, 702	10. 4	215	74	97	1, 825	11. 5	284
Oakland	2, 738	11. 2	292	66	63	2, 604	10. 8	261
Oklahoma City [6]	1, 139	11. 0	155	....	....	1, 275	12. 6	155
Omaha	2, 609	12. 6	315	58	71	2, 696	13. 2	348
Paterson	1, 680	12. 0	195	63	68	1, 825	13. 1	207
Philadelphia	25, 151	13. 0	3, 049	74	80	26, 628	13. 8	3, 251
Pittsburgh	9, 456	15. 2	1, 357	92	98	9, 821	15. 8	1, 509
Portland, Oreg	3, 167	11. 5	268	53	53	3, 052	11. 2	266
Providence	3, 452	14. 2	516	79	85	3, 578	14. 8	541
Richmond	2, 782	15. 2	370	87	110	2, 833	15. 6	473
St. Louis [6]	10, 896	13. 5	955	....	....	10, 924	13. 6	1, 063
St. Paul	2, 844	11. 7	291	48	66	3, 116	12. 9	405
Salt Lake City	1, 661	13. 0	210	63	62	1, 562	12. 4	206
San Antonio [6]	3, 002	15. 8	587	....	....	2, 728	14. 8	529
San Francisco	7, 431	13. 6	489	54	58	7, 318	13. 6	504
Schenectady	995	10. 0	120	65	69	1, 024	10. 4	122
Seattle [5]	3, 279	....	242	48	50	3, 017	....	266
Somerville	972	9. 7	104	54	70	1, 105	11. 2	137
Spokane [5]	1, 301	....	113	47	48	1, 225	....	114
Springfield, Mass	1, 687	11. 4	235	68	71	1, 719	11. 9	239
Syracuse	2, 235	11. 9	278	67	83	2, 392	13. 0	347
Tacoma	1, 095	10. 7	119	55	48	1, 113	10. 9	105
Toledo	3, 258	11. 7	392	68	74	3, 391	12 6	412
Trenton	1, 962	15. 2	284	89	78	1, 781	14. 0	245
Utica	1, 299	12. 4	151	60	81	1, 591	15. 4	194
Washington, D. C	6, 496	13. 4	707	77	92	7, 105	14. 9	827
Waterbury [5]	1, 002	....	180	77	89	1, 122	....	200
Wilmington, Del	1, 382	11. 6	199	87	99	1, 550	13. 2	230
Worcester	2, 419	12. 4	242	54	76	2, 521	13. 1	344
Yonkers	1, 092	10. 0	175	74	59	1, 091	10. 1	140
Youngstown	1, 684	10. 9	290	71	87	1, 697	11. 3	332

[5] Mortality rates are omitted, pending the establishment of more satisfactory estimates of population.
[6] Cities for which no infant mortality sate is given are not in the registration area for births.
[7] Minneapolis reported 122 deaths from smallpox for the four weeks ending Dec. 27, 1924

DEATHS DURING WEEK ENDED JANUARY 3, 1925

Summary of information received by telegraph from industrial insurance companies for week ended January 3, 1925, and corresponding week of 1924. (From the Weekly Health Index, January 8, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended Jan. 3, 1925	Corresponding week 1924
Policies in force	58, 136, 497	54, 449, 109
Number of death claims	10, 615	9, 184
Death claims per 1,000 policies in force, annual rate	9. 5	8. 8

Deaths from all causes in certain large cities of the United States during the week ended January 3, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, January 8, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Jan. 3, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Jan. 3, 1925 [2]
	Total deaths	Death rate [1]		Week ended Jan. 3, 1925	Corresponding week, 1924	
Total (64 cities)	7,629	14.5	[3] 13.0	939	[3] 807	
Akron	27			6	3	66
Albany [4]	35	15.2	11.9	2	4	44
Atlanta	80	17.9	14.7	12	9	
Baltimore [4]	254	16.6	14.1	21	30	61
Birmingham	82	20.8	14.0	15	5	
Boston	247	16.4	17.5	45	32	110
Bridgeport	39			8	7	127
Buffalo	136	12.8	13.5	12	16	49
Cambridge	24	11.1	17.7	5	8	86
Camden	44	17.8	15.7	8	8	131
Chicago [4]	781	13.6	11.9	106	89	94
Cincinnati	129	16.4	17.8	15	5	89
Cleveland	214	11.9	11.3	26	26	65
Columbus	90	17.1	14.4	10	10	94
Dallas	59	15.9	13.0	4	7	
Dayton	37	11.2	12.3	1	4	16
Denver	83			11	15	
Des Moines	31	10.8	14.4	0	0	0
Detroit	267			61	50	103
Duluth	11	5.2	7.2	0	1	0
Erie	35			4	3	78
Fall River [4]	35	15.1	10.3	4	5	58
Flint	17			5	0	82
Fort Worth	28	9.6	9.5	4	4	
Grand Rapids	36	12.5	10.9	3	3	47
Houston	60			7	3	
Indianapolis	100	14.5	10.5	10	10	69
Jacksonville, Fla	47	23.4	16.8	6	5	133
Jersey City	89	14.7	14.4	14	15	98
Kansas City, Kans	46	19.4	11.6	4	2	84
Kansas City, Mo	103	14.6	14.8	12	14	
Los Angeles	266			22	15	61
Louisville	92	18.5	15.5	10	13	87
Lowell	24	10.7	13.5	5	6	87
Lynn	28	13.9	14.6	0	3	0
Memphis	82	24.5	20.0	5	9	
Milwaukee	105	10.9	5.8	29	8	133
Minneapolis	111	13.6	10.1	10	10	53
Nashville	47	19.7	14.8	8	3	
New Bedford	33	12.7	10.6	4	8	66
New Haven	45	13.1	11.6	3	3	39
New Orleans	181	22.8	17.8	25	15	
New York	1,582	13.5	12.1	188	167	75
Bronx Borough	174	10.1	8.9	22	16	76
Brooklyn Borough	507	11.8	10.7	61	52	64
Manhattan Borough	686	15.8	15.0	77	82	77
Queens Borough	161	14.6	10.0	23	16	114
Richmond Borough	54	21.0	14.4	5	1	90
Newark, N. J	113	13.0	11.9	24	26	109
Norfolk	38	11.7	11.4	4	2	71
Oakland	61	12.5	11.2	5	8	59
Omaha	54	13.3	11.8	15	2	144
Paterson	42	15.5	10.4	3	3	50
Philadelphia	597	15.7	14.7	89	69	112
Pittsburgh	224	18.5	10.3	30	10	105
Portland, Oreg	89	16.4	14.3	8	7	83
Providence	73	15.5	13.5	3	5	24
Richmond	45	12.6	17.6	6	7	73
Rochester	82	12.9		5		40
St. Louis	245	15.6	13.5	18	13	
St. Paul	61	12.9	10.5	7	9	60
Salt Lake City [4]	37	14.7	17.4	6	8	94
San Antonio	66	17.4	11.4	13	6	

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 63 cities.
[4] Deaths for week ended Friday, Jan. 2, 1925.

Deaths from all causes in certain large cities of the United States during the week ended January 3, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, January 8, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Jan. 3, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Jan 3, 1925
	Total deaths	Death rate		Week ended Jan 3, 1925	Corresponding week, 1924	
San Francisco	178	16.6	17.4	9	6	52
Schenectady	18	9.2	10.9	1	6	28
Seattle	74			5	9	51
Somerville	24	12.3	12.5	6	2	161
Spokane	29			1	1	22
Springfield, Mass.	27	9.2	13.0	3	4	45
Syracuse	47	12.8	13.6	11	8	138
Tacoma	23	11.5	16.7	2	6	48
Toledo	78	14.2	11.2	9	4	81
Trenton	47	18.6	12.9	11	1	179
Utica	21	10.2	15.8	2	0	41
Washington, D. C.	141	14.8	11.6	8	16	45
Waterbury	20			3	4	66
Wilmington, Del.	33	14.1	9.6	6	4	137
Worcester	57	14.9	13.9	8	5	92
Yonkers	20	9.3	12.8	0	5	0
Youngstown	20	6.5	18.5	1	8	13

DEATHS DURING WEEK ENDED JANUARY 10, 1925

Summary of information received by telegraph from industrial insurance companies for week ended January 10, 1925, and corresponding week of 1924. (From the Weekly Health Index, January 14, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended Jan. 10, 1925	Corresponding week, 1924
Policies in force	58,318,201	54,575,083
Number of death claims	11,695	10,542
Death claims per 1,000 policies in force, annual rate	10.5	10.1

Deaths from all causes in certain large cities of the United States during the week ended January 10, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, January 14, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Jan. 10, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Jan. 10, 1925 [2]
	Total deaths	Death rate [1]		Week ended Jan. 10, 1925	Corresponding week, 1924	
Total (63 cities)	7,686	14.7	[3] 14.1	853	[3] 837	
Akron	37			8	6	88
Albany [4]	39	17.0	13.2	1	0	22
Atlanta	76	17.0	23.1	14	17	
Baltimore [4]	305	20.0	16.9	21	35	61
Birmingham	82	20.8	14.0	14	6	
Boston	255	17.0	15.1	45	35	119
Bridgeport	36			0	5	0
Buffalo	159	15.0	16.1	17	23	69
Cambridge	36	16.7	15.8	0	6	0

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 62 cities.
[4] Deaths for week ended Friday, Jan. 9, 1925.

Deaths from all causes in certain large cities of the United States during the week ended January 10, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, January 14, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Jan. 10, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Jan. 10, 1925
	Total deaths	Death rate		Week ended Jan. 10, 1925	Corresponding week, 1924	
Camden	38	15.4	11.6	4	4	66
Chicago [4]	822	14.3	14.4	115	98	102
Cincinnati	134	17.1	15.1	14	7	83
Cleveland	187	10.4	11.2	24	26	60
Columbus	83	15.8	13.0	7	6	66
Dallas	41	11.1	13.0	7	5	...
Dayton	38	11.5	12.9	2	1	32
Denver	81	...	...	8	11	...
Des Moines	32	11.2	13.3	2	4	34
Detroit	260	...	...	49	57	83
Duluth	25	11.8	10.6	2	3	42
Erie	29	...	...	6	3	117
Fall River [4]	31	13.3	12.1	3	5	43
Flint	17	...	...	1	5	16
Fort Worth	32	10.9	9.9	5	5	...
Grand Rapids	37	12.8	13.0	2	4	31
Houston	51	...	...	5	6	...
Indianapolis	98	14.2	13.2	5	9	34
Jacksonville, Fla	47	23.4	17.3	2	1	44
Jersey City	90	14.9	16.9	12	12	84
Kansas City, Kans	37	15.6	15.0	4	5	84
Kansas City, Mo	93	13.2	17.5	2	11	...
Los Angeles	263	...	...	36	30	100
Louisville	75	15.1	21.0	12	13	105
Lowell	33	14.8	15.8	8	10	139
Lynn	26	12.9	13.1	3	4	80
Memphis	68	20.3	15.4	1	4	...
Milwaukee	110	11.4	9.8	15	11	69
Minneapolis	103	12.6	12.7	12	9	64
Nashville [4]	45	18.9	24.9	7	5	...
New Bedford	18	6.9	8.7	1	6	17
New Haven	43	12.5	13.6	4	6	52
New Orleans	144	18.1	19.7	16	11	...
New York	1,660	14.2	13.0	186	191	74
Bronx Borough	189	10.9	8.4	21	15	73
Brooklyn Borough	522	12.2	12.5	65	74	68
Manhattan Borough	754	17.4	15.4	72	81	72
Queens Borough	139	12.6	10.2	22	11	109
Richmond Borough	56	21.8	20.7	6	10	108
Newark, N. J	151	17.4	9.0	27	8	123
Norfolk	44	13.6	8.6	2	1	36
Oakland	64	13.2	12.2	3	5	35
Omaha	34	8.4	12.8	1	8	10
Paterson	56	20.6	14.8	4	7	67
Philadelphia	620	16.3	15.1	67	70	84
Pittsburgh	165	13.6	15.5	22	23	77
Portland, Oreg	68	12.6	13.9	1	9	10
Providence	59	12.6	10.9	8	3	64
Richmond	52	14.5	20.7	7	4	85
Rochester	74	11.6	...	6	...	47
St. Louis	287	18.2	15.7	28	17	...
St. Paul	47	10.0	13.9	7	6	60
Salt Lake City [4]	34	13.5	13.4	4	1	63
San Antonio	69	18.2	18.0	8	6	...
San Francisco	188	17.6	16.5	12	4	69
Schenectady	19	9.7	8.3	2	3	56
Seattle	65	...	...	2	3	20
Somerville	19	9.7	7.8	2	1	54
Spokane	30	...	...	2	0	44
Springfield, Mass	37	12.6	16.9	5	7	74
Syracuse	44	12.0	10.0	6	4	75
Tacoma	34	17.0	10.1	2	3	48
Toledo	72	13.1	15.4	7	10	63
Trenton	59	23.3	20.9	7	8	114
Utica	29	14.1	12.9	0	6	0
Washington, D. C	127	13.3	14.5	10	11	56
Waterbury	21	...	...	4	6	88
Wilmington, Del	36	15.4	15.2	7	9	160
Yonkers	23	10.7	6.7	5	2	110
Youngstown	33	10.8	10.4	4	3	51

[4] Deaths for week ended Friday, Jan. 9, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended January 17, 1925

ALABAMA

	Cases
Chicken pox	58
Dengue	1
Diphtheria	34
Dysentery	3
Hiccough (epidemic)	(1)
Influenza	277
Lethargic encephalitis	2
Malaria	14
Measles	20
Mumps	87
Ophthalmia neonatorum	1
Pellagra	3
Pneumonia	134
Scarlet fever	25
Smallpox	205
Trachoma	6
Tuberculosis	33
Typhoid fever	13
Whooping cough	23

ARIZONA

Chicken pox	10
Diphtheria	2
Measles	55
Mumps	42
Scarlet fever	7
Smallpox	27
Tuberculosis	52
Typhoid fever	1
Whooping cough	1

ARKANSAS

Cerebrospinal meningitis	1
Chicken pox	33
Diphtheria	9
Influenza	218
Malaria	25

[1] Reported in six counties.

ARKANSAS—continued

	Cases
Measles	49
Mumps	30
Pellagra	9
Scarlet fever	13
Smallpox	11
Trachoma	2
Tuberculosis	11
Typhoid fever	10
Whooping cough	27

CALIFORNIA

Cerebrospinal meningitis:	
Berkeley	1
San Diego	1
Diphtheria	130
Influenza	22
Measles	52
Plague—Los Angeles	1
Poliomyelitis.	
Alameda	1
Ventura County	1
Scarlet fever	159
Smallpox.	
Los Angeles	46
Oakland	16
Sacramento	9
San Diego	10
Butte County	10
Los Angeles County	39
Orange County	8
Scattering	42
Typhoid fever	6

CONNECTICUT

Cerebrospinal meningitis	1
Chicken pox	132
Conjunctivitis (infectious)	1

Reports for Week Ended January 17, 1925—Continued

CONNECTICUT—continued

	Cases
Diphtheria	70
Dysentery (amebic)	1
German measles	32
Influenza	5
Jaundice	1
Lethargic encephalitis	2
Measles	44
Mumps	63
Pneumonia (all forms)	107
Poliomyelitis	1
Scarlet fever	179
Septic sore throat	6
Trachoma	1
Trichinosis	3
Tuberculosis (all forms)	34
Typhoid fever	3
Whooping cough	61

DELAWARE

Chicken pox	4
Diphtheria	1
Influenza	1
Measles	1
Mumps	5
Pneumonia	1
Scarlet fever	2
Tuberculosis	6
Whooping cough	1

DISTRICT OF COLUMBIA

Cerebrospinal meningitis	1
Chicken pox	37
Diphtheria	12
Influenza	4
Lethargic encephalitis	1
Measles	4
Pneumonia	46
Scarlet fever	35
Smallpox	7
Tuberculosis	21
Typhoid fever	6
Whooping cough	11

FLORIDA

Diphtheria	9
Influenza	49
Malaria	5
Pneumonia	13
Scarlet fever	3
Smallpox	1
Typhoid fever	12

GEORGIA

Cerebrospinal meningitis	1
Chicken pox	33
Diphtheria	48
Hookworm disease	5
Influenza	44
Malaria	1
Measles	1
Mumps	88
Pellagra	1
Pneumonia	48
Poliomyelitis	1

GEORGIA—continued

	Cases
Scarlet fever	12
Smallpox	9
Tetanus	1
Tuberculosis	18
Typhoid fever	4
Whooping cough	7

ILLINOIS

Diphtheria:	
Cook County	88
Sangamon County	8
Scattering	38
Influenza	23
Lethargic encephalitis—Cook County	2
Measles	288
Pneumonia	362
Scarlet fever:	
Cook County	292
Madison County	14
Morgan County	13
Peoria County	10
St. Clair County	23
Sangamon County	9
Will County	9
Scattering	101
Smallpox:	
St. Clair County	14
Scattering	29
Tuberculosis	208
Typhoid fever	33
Whooping cough	257

INDIANA

Chicken pox	237
Diphtheria	46
Influenza	75
Measles	86
Mumps	9
Ophthalmia neonatorum	1
Pneumonia	26
Scarlet fever:	
Allen County	17
Bartholomew County	11
Dekalb County	8
Elkhart County	10
Kosciusko County	14
La Porte County	8
St. Joseph County	16
Scattering	74
Smallpox:	
Clay County	49
Marion County	22
Tipton County	14
Tippecanoe County	10
Vigo County	21
Wabash County	12
Scattering	30
Tuberculosis	26
Typhoid fever	15
Whooping cough	26

IOWA

Diphtheria	19
Scarlet fever	72
Smallpox	73

Reports for Week Ended January 17, 1925—Continued

KANSAS

	Cases
Cerebrospinal meningitis	3
Chicken pox	118
Diphtheria	32
Influenza	23
Measles	5
Mumps	297
Pneumonia	42
Poliomyelitis	1
Scarlet fever	99
Smallpox	5
Tuberculosis	65
Typhoid fever	3
Whooping cough	23

LOUISIANA

	Cases
Diphtheria	23
Influenza	31
Leprosy	2
Malaria	4
Pneumonia	73
Scarlet fever	15
Smallpox	41
Tuberculosis	28
Typhoid fever	5
Whooping cough	6

MAINE

	Cases
Chicken pox	34
Diphtheria	6
German measles	1
Influenza	8
Measles	16
Mumps	100
Pneumonia	11
Poliomyelitis	3
Scarlet fever	30
Septic sore throat	1
Tuberculosis	6
Typhoid fever	6
Vincent's angina	1
Whooping cough	40

MARYLAND[1]

	Cases
Cerebrospinal meningitis	1
Chicken pox	73
Diphtheria	31
German measles	2
Influenza	200
Lethargic encephalitis	2
Measles	38
Mumps	31
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pneumonia (all forms)	163
Poliomyelitis	2
Scarlet fever	95
Septic sore throat	9
Tetanus	1
Tuberculosis	46
Typhoid fever	5
Vincent's angina	1
Whooping cough	66

[1] Week ended Friday.

MASSACHUSETTS

	Cases
Anthrax	3
Cerebrospinal meningitis	3
Chicken pox	334
Conjunctivitis (suppurative)	13
Diphtheria	152
German measles	106
Influenza	13
Lethargic encephalitis	4
Measles	248
Mumps	106
Ophthalmia neonatorum	22
Pneumonia (lobar)	147
Poliomyelitis	2
Scarlet fever	389
Septic sore throat	3
Tuberculosis (all forms)	149
Typhoid fever	14
Whooping cough	102

MICHIGAN

	Cases
Diphtheria	127
Measles	166
Pneumonia	130
Scarlet fever	334
Smallpox	42
Tuberculosis	79
Typhoid fever	12
Whooping cough	113

MINNESOTA

	Cases
Chicken pox	141
Diphtheria	63
Lethargic encephalitis	1
Measles	13
Pneumonia	2
Scarlet fever	264
Smallpox	69
Tuberculosis	37
Typhoid fever	4
Whooping cough	38

MISSISSIPPI

	Cases
Diphtheria	13
Poliomyelitis	1
Scarlet fever	9
Smallpox	25
Typhoid fever	12

MISSOURI

(Exclusive of Kansas City)

	Cases
Chicken pox	58
Diphtheria	69
Influenza	120
Malaria	2
Measles	5
Mumps	19
Ophthalmia neonatorum	2
Pneumonia	1
Scarlet fever	148
Septic sore throat	1
Smallpox	20
Trachoma	9
Tuberculosis	29
Typhoid fever	3
Whooping cough	7

Reports for Week Ended January 17, 1925—Continued

MONTANA

	Cases
Diphtheria	13
Scarlet fever	46
Smallpox	20

NEW JERSEY

Chicken pox	284
Diphtheria	137
Influenza	22
Measles	135
Paratyphoid fever	1
Pneumonia	231
Poliomyelitis	1
Scarlet fever	259
Smallpox	5
Trachoma	2
Typhoid fever	17
Whooping cough	284

NEW MEXICO

Chicken pox	19
Diphtheria	5
Influenza	15
Measles	43
Mumps	3
Pneumonia	18
Scarlet fever	11
Septic sore throat	5
Tuberculosis	17
Whooping cough	1

NEW YORK [3]

(Exclusive of New York City)

Cerebrospinal meningitis	2
Diphtheria	96
Influenza	94
Lethargic encephalitis	8
Measles	201
Pneumonia	304
Poliomyelitis	2
Scarlet fever	358
Smallpox	17
Typhoid fever	35
Whooping cough	231

NORTH CAROLINA

Cerebrospinal meningitis	3
Chicken pox	166
Diphtheria	41
German measles	1
Measles	19
Scarlet fever	32
Septic sore throat	7
Smallpox	63
Typhoid fever	2
Whooping cough	90

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Diphtheria	10
Smallpox	5
Typhoid fever	12

OREGON

	Cases
Cerebrospinal meningitis	1
Chicken pox	53
Diphtheria:	
Portland	20
Scattering	18
Influenza	8
Lethargic encephalitis	2
Measles	6
Mumps	30
Pneumonia	[4] 10
Scarlet fever:	
Portland	11
Scattering	20
Smallpox:	
Portland	32
Scattering	14
Tuberculosis	11
Whooping cough	3

SOUTH DAKOTA

Chicken pox	14
Diphtheria	14
Measles	3
Mumps	2
Pneumonia	2
Rocky Mountain spotted fever	1
Scarlet fever	46
Smallpox	3
Typhoid fever	9
Whooping cough	1

TEXAS

Cerebrospinal meningitis	1
Chicken pox	58
Dengue	1
Diphtheria	45
Dysentery (epidemic)	1
Influenza	419
Measles	37
Mumps	82
Pneumonia	27
Scarlet fever	19
Smallpox	9
Typhoid fever	4
Tuberculosis	33
Whooping cough	3

VERMONT

Chicken pox	59
Mumps	34
Scarlet fever	12
Whooping cough	14

VIRGINIA

Cerebrospinal meningitis—Augusta County	1

WASHINGTON

Chicken pox	108
Diphtheria	32
Lethargic encephalitis	1
Measles	42

[3] Figures include Rochester reports for two weeks.

[4] Deaths.

Reports for Week Ended January 17, 1925—Continued

WASHINGTON—continued

	Cases
Mumps	86
Pneumonia	1
Poliomyelitis—San Juan County	3
Scarlet fever	52
Smallpox	38
Tuberculosis	39
Whooping cough	21

WEST VIRGINIA

	Cases
Diphtheria	12
Scarlet fever	17
Smallpox	8
Typhoid fever	2

WISCONSIN

	Cases
Milwaukee:	
Cerebrospinal meningitis	1
Chicken pox	63
Diphtheria	19
German measles	121
Influenza	1
Measles	219
Mumps	70
Pneumonia	2
Poliomyelitis	1
Scarlet fever	10
Smallpox	2
Tuberculosis	8

WISCONSIN—continued

	Cases
Typhoid fever	1
Whooping cough	26
Scattering:	
Chicken pox	305
Diphtheria	32
German measles	9
Influenza	23
Lethargic encephalitis	2
Measles	91
Mumps	341
Pneumonia	20
Scarlet fever	168
Smallpox	84
Tuberculosis	23
Typhoid fever	4
Whooping cough	61

WYOMING

	Cases
Chicken pox	14
Diphtheria	1
Measles	1
Mumps	1
Pneumonia	5
Scarlet fever	7
Small pox	2
Tuberculosis	2
Typhoid fever	1

Reports for Week Ended January 10, 1925

DISTRICT OF COLUMBIA

	Cases
Chicken pox	48
Diphtheria	26
Influenza	2
Measles	21
Pneumonia	31
Scarlet fever	14
Smallpox	1
Tuberculosis	22
Typhoid fever	15
Whooping cough	17

NEBRASKA

	Cases
Chicken pox	47
Diphtheria	5
German measles	1
Lethargic encephalitis	1
Measles	2
Mumps	7

NEBRASKA—continued

	Cases
Pneumonia	4
Scarlet fever	25
Smallpox	26
Typhoid fever	1
Whooping cough	3

NORTH DAKOTA

	Cases
Chicken pox	33
Diphtheria	11
German measles	2
Measles	7
Mumps	33
Pneumonia	5
Scarlet fever	57
Smallpox	15
Tuberculosis	5
Typhoid fever	3
Whooping cough	10

23312°—25†——3

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
November, 1924										
District of Columbia	0	56	5		2	0	2	74	1	7
December, 1924										
District of Columbia	0	62	11		16	0	0	173	0	35
Massachusetts	2	677	73	2	674		13	1,411		73
Missouri	3	131	65	0	22	0	0	937	43	24
New Jersey	9	519	94		336		2	811	11	122
Vermont		25			44			93		5
West Virginia	4	120	128		79			213	47	39

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

Los Angeles, Calif.—During the week ended January 3, 1925, plague infection was found in three rodents at Los Angeles, Calif.

Oakland, Calif.—No plague infection was found in Oakland, Calif., during the week ended January 3, 1925.

New Orleans, La.—The following items are taken from the report of plague-eradicative measures in New Orleans, La., for the week ended January 3, 1925:

Number of inspections of vessels for rat guards	1,025
Number of vessels fumigated with cyanide gas	31
Number of rodents examined for plague	3,306
Number of rodents found plague infected	0

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended January 3, 1925, 35 States reported 1,632 cases of diphtheria. For the week ended January 5, 1924, the same States reported 2,669 cases of this disease. One hundred and five cities, situated in all parts of the country and having an aggregate population of nearly 28,900,000, reported 876 cases of diphtheria for the week ended January 3, 1925. Last year, for the corresponding week, they reported 1,339 cases. The estimated expectancy for these cities was 1,321 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty States reported 1,560 cases of measles for the week ended January 3, 1924, and 10,793 cases of this disease for the week ended January 5, 1924. One hundred and five cities reported 868 cases for the week this year and 4,008 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: Thirty-five States—this year, 3,433; last year, 3,442 cases. One hundred and five cities—this year, 1,638 cases; last year, 1,550 cases; estimated expectancy, 1,004 cases.

Smallpox.—For the week ended January 3, 1925, 35 States reported 759 cases of smallpox. Last year, for the corresponding week, they reported 807 cases of smallpox. One hundred and five cities reported smallpox for the week as follows: 1925, 241 cases; 1924, 178 cases; estimated expectancy, 71 cases. Twenty-one deaths from smallpox for the week this year were reported at Minneapolis.

Typhoid fever.—Four hundred and forty-eight cases of typhoid fever were reported for the week ended January 3, 1925, by 34 States. For the corresponding week of 1924 the same States reported 243 cases. One hundred and five cities reported 203 cases of typhoid fever for the week this year and 63 cases for the week last year. The estimated expectancy for these cities was 36 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 105 cities as follows: 1925, 1,198 deaths; 1924, 898 deaths.

City reports for week ended January 3, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported	Scarlet fever	
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported				Cases, estimated expectancy	Cases reported
NEW ENGLAND										
Maine:										
Lewiston		1	0	0	0	0		0	1	2
Portland	21	2	0	4	0	1	48	0	2	0
New Hampshire:										
Concord	0	1	0	0	0	0	0	0	1	2
Nashua	1	0	1	0	0	10	0	1	1	1
Vermont:										
Barre	0	0	0	0	0	0	3	0	1	4
Burlington	3	1	0	0	0	0	0	3	2	6
Massachusetts:										
Boston	36	47	52	1	1	69	9	40	47	134
Fall River	0	5	5	3	0	0	0	5	3	2
Springfield	1	5	2	0	0	73	0	2	7	15
Worcester	8	5	3	0	0	1	0	3	10	5
Rhode Island:										
Pawtucket	0	2	2	0	0	0	0	0	1	3
Providence	0	13	13	3	0	2	0	10	9	4
Connecticut:										
Bridgeport	0	8	11	1	0	0	0	4	5	15
Hartford	8	9	14	0	0	0	5	1	7	7
New Haven	21	6	2	0	0	7	0	5	6	24

City reports for week ended January 3, 1925—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported
MIDDLE ATLANTIC										
New York:										
Buffalo	17	30	5	0	3	74	8	10	22	15
New York	149	228	153	29	24	30	19	257	154	248
Rochester	0	13	0	0	0	7	24	6	11	49
Syracuse	4	10	6	0	0	1	4	3	13	7
New Jersey:										
Camden	8	4	5	0	0	15	1	13	2	6
Newark	18	22	11	11	1	32	2	21	18	35
Trenton	1	8	4	2	1	4	0	5	2	2
Pennsylvania:										
Philadelphia	97	79	64	--------	11	28	20	90	53	116
Pittsburgh	45	29	27	--------	2	48	28	41	25	86
Reading	9	6	2	0	0	0	5	0	1	1
Scranton	0	5	3	0	0	1	0	6	3	1
E. NORTH CENTRAL										
Ohio:										
Cincinnati	13	18	7	0	0	0	0	0	11	17
Cleveland	109	40	40	16	4	3	5	25	36	25
Columbus	8	8	3	0	0	1	0	14	8	10
Toledo	19	10	13	0	1	3	0	13	15	16
Indiana:										
Fort Wayne	6	4	6	0	1	1	0	2	3	5
Indianapolis	67	20	13	0	0	0	5	11	10	8
South Bend	6	1	2	0	0	3	0	2	4	2
Terre Haute	10	3	1	0	1	0	0	0	2	7
Illinois:										
Chicago	121	158	78	12	5	194	13	112	123	153
Cicero	1	3	1	0	0	0	0	0	1	2
Peoria	12	1	0	0	0	0	0	4	6	5
Springfield	5	2	3	0	0	0	6	1	1	2
Michigan:										
Detroit	28	79	36	1	1	2	5	42	78	73
Flint	4	11	0	0	0	0	1	0	8	3
Grand Rapids	7	6	4	0	0	20	2	2	6	8
Wisconsin:										
Madison	16	2	0	0	--------	0	67	--------	2	2
Milwaukee	25	24	8	1	1	172	10	11	35	11
Racine	4	2	1	0	0	1	3	0	5	0
Superior	0	1	0	0	0	0	0	0	2	0
W. NORTH CENTRAL										
Minnesota:										
Duluth	5	2	0	0	0	1	1	0	5	14
Minneapolis	43	21	13	0	0	0	13	6	29	64
St. Paul	25	18	16	0	0	1	10	7	16	18
Iowa:										
Davenport	0	1	0	0	--------	0	1	--------	2	2
Sioux City	3	3	2	0	--------	0	0	--------	3	1
Waterloo	--------	0	1	0	--------	0	--------	--------	4	3
Missouri:										
Kansas City	16	14	9	3	4	0	4	17	12	60
St. Joseph	1	4	3	0	0	0	0	4	3	3
St. Louis	20	73	27	1	0	3	2	--------	30	107
North Dakota:										
Fargo	4	0	0	0	0	0	1	1	1	0
Grand Forks	0	1	0	0	--------	0	0	--------	1	0
South Dakota:										
Aberdeen	7	--------	1	0	--------	1	1	--------	--------	
Sioux Falls	1	1	2	0	0	0	0	0	2	0
Nebraska:										
Lincoln	7	2	3	0	--------	0	0	--------	2	1
Omaha	5	6	11	0	0	0	0	6	5	
Kansas:										
Topeka	19	2	0	0	0	0	74		1	8
Wichita	7	5	1	0	0	0	0	2	3	0
SOUTH ATLANTIC										
Delaware:										
Wilmington	4	2	3	0	0	1	1	3	3	2
Maryland:										
Baltimore	29	35	30	97	4	3	1	51	27	49
Cumberland	--------	1	1	0	0	1	--------	1	1	0
Frederick	0	1	0	0	0	0	0	0	0	0

City reports for week ended January 3, 1925—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths, reported	Scarlet fever	
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported				Cases, estimated expectancy	Cases reported
SOUTH ATLANTIC—continued										
District of Columbia:										
Washington	12	20	7	2	1	2	....	17	9	33
Virginia:										
Lynchburg	8	1	2	0	0	0	9	1	0	0
Norfolk	13	3	2	0	....	1	35	....	1	2
Richmond	0	8	11	0	0	1	0	6	5	1
Roanoke	5	2	4	0	1	0	0	3	[illegible]	0
West Virginia:										
Charleston	12	1	2	2	0	3	1	4	1	3
Huntington	0	2	1	0	....	0	0	....	1	0
Wheeling	6	2	0	0	1	14	1	3	1	3
North Carolina:										
Raleigh	5	1	0	0	2	0	0	1	1	0
Wilmington	2	0	0	0	1	0	7	0	1	0
Winston-Salem	5	1	3	0	0	0	2	4	1	3
South Carolina:										
Charleston	0	2	1	0	0	0	0	5	0	1
Columbia	0	1	0	0	0	0	[illegible]	1	0	0
Greenville	0	0	0	0	0	0	0	2	0	0
Georgia:										
Atlanta	2	4	3	4	2	0	2	14	4	2
Brunswick	2	0	0	0	1	0	0	0	0	0
Savannah	0	1	2	0	0	0	1	5	1	0
Florida:										
St. Petersburg	1	0	0	0	0	0	0	2	0	0
Tampa	0	1	1	[illegible]	0	0	0	0	0	1
EAST SOUTH CENTRAL										
Kentucky:										
Covington	2	1	1	0	0	0	2	2	1	3
Lexington	5	1	1	0	0	0	0	2	1	1
Louisville	4	10	7	2	0	1	0	15	5	6
Tennessee:										
Memphis	6	8	3	0	2	1	0	8	3	9
Nashville	1	3	1	0	1	1	0	6	2	1
Alabama:										
Birmingham	18	3	3	4	7	0	1	18	4	7
Mobile	2	1	0	0	1	0	1	4	0	2
Montgomery	0	1	1		0	0	0	0	0	2
WEST SOUTH CENTRAL										
Arkansas:										
Fort Smith	0	2	1	0	....	0	2	....	1	0
Little Rock	0	2	0	2	0	1	1	7	2	1
Louisiana:										
New Orleans	3	14	15	3	3	1	0	21	3	4
Shreveport	4	....	0	0	0	0	0	5	....	0
Oklahoma:										
Oklahoma	3	2	1	0	0	0	0	3	3	0
Tulsa	5	3	1	0	....	1	....	....	2	3
Texas:										
Dallas	26	9	9	0	1	0	1	5	2	11
Galveston	0	1	1	0	0	0	0	4	0	[illegible]
Houston	....	3	4	0	4	0	....	12	1	[illegible]
San Antonio	0	1	2	0	2	0	0	13	0	[illegible]
MOUNTAIN										
Montana:										
Billings	10	0	0	0	0	0	0	2	1	[illegible]
Great Falls	5	1	[illegible]	0	0	8	0	0	1	[illegible]
Helena	....	0	1	0	0	0	....	0	0	[illegible]
Missoula	....	0	2	0	[illegible]	0	....	[illegible]	0	[illegible]
Idaho:										
Boise	0	0	0	0	0	0	0	0	1	[illegible]
Colorado:										
Denver	6	10	7	0	4	1	45	19	9	[illegible]
Pueblo	22	4	1	0	0	2	1	2	3	[illegible]

City reports for week ended January 3, 1925—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths, reported	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported
MOUNTAIN—contd.										
New Mexico:										
Albuquerque	7	1	0	0	0	0	0	2	0	0
Arizona:										
Phoenix	1		1	0	0	1	0	3		2
Utah:										
Salt Lake City	30	2	0	0	0	1	13	1	4	3
Nevada.										
Reno	0	0	0	0	0	0	0	0	0	2
PACIFIC										
Washington:										
Seattle	30	6	11	0		2	14			8
Spokane	18	3	1	0		16	0		4	3
Tacoma	6	3	0	0	0	0	2	6	3	6
Oregon:										
Portland	14	7	9	0	0	1	0	12	6	7
California:										
Los Angeles		34			1			21	15	
Sacramento	1	21	3	0	0	0	0	2	1	2
San Francisco	14	26	13	6	2	0	6	17	13	11

Division, State, and city	Population July 1, 1923, estimated	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND										
Maine.										
Lewiston	33,790	0	0	0	1	0	0	0		10
Portland	73,129	0	0	0	0	0	1	0	4	17
New Hampshire										
Concord	22,408	0	0	0	0	0	0	0	0	13
Nashua	29,234	0	0	0	0	0	0	0	2	5
Vermont:										
Barre	[1] 10,008	0	0	0	2	0	0	0	0	8
Burlington	23,613	0	0	0	0	0	0	0	1	12
Massachusetts										
Boston	770,400	0	0	0	9	1	5	1	29	247
Fall River	120,912	0	0	0	0	0	0	0	9	35
Springfield	144,227	0	0	0	0	0	0	0	13	30
Worcester	191,927	0	0	0	3	0	2	0	1	57
Rhode Island										
Pawtucket	68,799	0	0	0	0	0	0	0	0	29
Providence	242,378	0	0	0	3	0	2	1	0	73
Connecticut										
Bridgeport	[1] 143,555	0	0	0	3	0	0	0	0	39
Hartford	[1] 138,036	0	0	0	1	0	0	0	0	26
New Haven	172,967	0	0	0	3	0	0	0	7	45
MIDDLE ATLANTIC										
New York										
Buffalo	536,718	0	0	0	0	1	4	0	28	132
New York	5,927,625	0	0	0	[2] 116	12	99	17	100	1,582
Rochester	317,867	0	0	0	1	0	1	0	9	79
Syracuse	184,511	0	0	0	1	0	2	0	3	47
New Jersey.										
Camden	124,157	0	1	0	1	0	0	0	3	44
Newark	438,699	0	0	0	11	0	1	1	59	129
Trenton	127,390	0	0	0	4	0	0	0	8	47

[1] Population Jan. 1, 1920. [2] Pulmonary only.

City reports for week ended January 3, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
MIDDLE ATLANTIC—continued										
Pennsylvania:										
Philadelphia	1,922,788	0	4	0	34	3	5	0	53	597
Pittsburgh	613,442	1	0	0	9	1	3	3	4	224
Reading	110,917	0	0	0	3	0	0	0	4	21
Scranton	140,636	0	0	0	3	0	4	1	5	------
EAST NORTH CENTRAL										
Ohio:										
Cincinnati	406,312	1	0	0	7	0	3	0	0	129
Cleveland	888,519	2	1	0	16	1	3	1	14	214
Columbus	261,082	0	7	0	5	0	1	0	2	90
Toledo	268,338	2	0	0	4	0	1	0	18	78
Indiana:										
Fort Wayne	93,573	0	0	0	2	0	1	0	2	25
Indianapolis	342,718	2	9	0	2	0	0	0	0	84
South Bend	76,709	0	0	0	0	0	0	0	0	13
Terre Haute	68,939	0	8	0	0	0	0	0	0	24
Illinois:										
Chicago	2,886,121	1	0	0	42	3	27	2	105	781
Cicero	55,968	0	0	0	0	0	0	0	0	6
Peoria	79,675	1	0	0	0	0	0	0	0	18
Springfield	61,833	0	0	0	0	0	1	1	0	30
Michigan:										
Detroit	995,668	3	5	0	23	2	1	2	27	267
Flint	117,968	1	0	0	1	0	0	0	0	19
Grand Rapids	145,947	1	1	0	0	0	1	0	7	37
Wisconsin:										
Madison	42,519	0	0	------	------	0	0	------	0	8
Milwaukee	484,595	2	1	0	3	0	0	0	14	105
Racine	[1] 64,393	0	3	0	1	0	0	0	0	8
Superior	39,671	2	1	0	1	0	0	0	0	7
WEST NORTH CENTRAL										
Minnesota:										
Duluth	106,289	1	0	0	2	0	0	0	4	11
Minneapolis	409,125	9	44	21	3	0	2	0	3	111
St. Paul	241,891	12	6	0	2	1	0	0	11	68
Iowa:										
Davenport	61,262	1	3	------	------	0	0	------	0	------
Sioux City	79,662	0	0	------	------	0	0	------	2	------
Waterloo	39,667	0	3	------	------	0	0	------	0	------
Missouri:										
Kansas City	351,819	2	0	0	7	1	0	0	0	103
St. Joseph	78,232	1	0	0	1	0	0	0	0	38
St. Louis	803,353	1	4	0	12	2	0	0	3	245
North Dakota:										
Fargo	24,841	1	0	0	0	0	0	0	0	6
Grand Forks	14,547	1	0	------	------	0	0	------	0	------
South Dakota:										
Aberdeen	15,829	------	0	------	------	------	0	------	2	------
Sioux Falls	29,206	0	0	0	0	0	0	0	0	7
Nebraska:										
Lincoln	58,761	1	0	0	0	0	1	0	1	24
Omaha	204,382	2	5	0	0	0	0	0	0	54
Kansas:										
Topeka	52,555	0	0	0	0	0	0	0	2	22
Wichita	79,261	0	0	0	1	0	0	0	1	27
SOUTH ATLANTIC										
Delaware:										
Wilmington	117,728	0	0	0	3	0	0	1	0	33
Maryland:										
Baltimore	773,580	0	0	0	17	2	5	0	38	254
Cumberland	32,361	0	0	0	0	0	0	0	------	0
Frederick	11,301	0	0	0	0	0	1	0	0	3

[1] Population Jan. 1, 1920.

City reports for week ended January 3, 1925—**Continued**

Division, State, and city	Population July 1, 1923, estimated	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
SOUTH ATLANTIC—continued										
District of Columbia:										
Washington	[1] 437,571	0	0	0	17	1	9	4	17	141
Virginia:										
Lynchburg	30,277	0	0	0	0	0	0	0	1	10
Norfolk	159,089	0	0	------	------	0	0	------	7	------
Richmond	181,044	0	0	0	1	1	0	0	1	39
Roanoke	55,502	0	0	0	1	0	0	0	0	15
West Virginia:										
Charleston	45,597	0	7	0	1	0	3	0	0	30
Huntington	57,918	0	3	------	------	0	0	------	0	------
Wheeling	[1] 56,208	0	0	0	0	0	0	1	0	26
North Carolina:										
Raleigh	29,171	0	2	0	2	0	0	0	0	10
Wilmington	35,719	0	4	0	0	0	0	0	0	10
Winston-Salem	56,230	1	2	0	2	0	0	0	0	14
South Carolina:										
Charleston	71,245	0	0	0	1	0	0	0	0	29
Columbia	39,688	0	0	0	1	0	0	0	0	24
Greenville	25,789	0	3	0	0	0	0	0	0	19
Georgia:										
Atlanta	222,963	2	1	0	4	0	1	0	2	80
Brunswick	15,937	0	0	0	1	0	0	0	0	3
Savannah	89,448	0	0	0	2	0	1	1	0	47
Florida:										
St. Petersburg	24,403	0	0	0	0	0	0	0	0	9
Tampa	56,050	0	0	0	1	0	0	1	0	18
EAST SOUTH CENTRAL										
Kentucky:										
Covington	57,877	0	0	0	1	0	0	0	1	19
Lexington	43,673	0	0	0	2	0	0	0	0	14
Louisville	257,671	0	1	0	4	1	1	0	3	92
Tennessee:										
Memphis	170,067	1	1	0	5	0	3	1	0	82
Nashville	121,128	0	1	0	3	0	0	0	1	47
Alabama:										
Birmingham	195,901	1	60	0	7	0	3	0	0	82
Mobile	63,858	0	0	0	3	0	0	0	0	30
Montgomery	45,383	0	2	0	0	0	0	0	0	15
WEST SOUTH CENTRAL										
Arkansas:										
Fort Smith	30,635	0	0	------	------	0	0	------	0	------
Little Rock	70,916	0	0	0	2	0	1	0	0	------
Louisiana:										
New Orleans	404,575	2	0	0	19	1	2	2	0	181
Shreveport	54,590	------	0	0	1	------	0	2	0	31
Oklahoma:										
Oklahoma	101,150	2	1	0	1	0	0	0	0	22
Tulsa	102,018	1	2	------	------	0	0	------	------	------
Texas:										
Dallas	177,274	0	3	0	5	0	1	0	0	59
Galveston	46,877	0	0	0	0	0	3	0	0	25
Houston	154,970	0	4	0	4	0	0	0	------	60
San Antonio	184,727	0	0	0	6	0	1	1	0	66
MOUNTAIN										
Montana:										
Billings	16,927	0	0	0	0	0	0	0	16	4
Great Falls	27,787	1	2	0	0	0	0	0	0	6
Helena	[1] 12,037	0	0	0	0	0	0	0	------	4
Missoula	[1] 12,668	0	0	0	1	0	0	0	------	9
Idaho:										
Boise	22,806	0	3	0	0	0	0	0	0	2
Colorado:										
Denver	272,031	4	0	0	9	0	0	0	1	83
Pueblo	43,519	0	0	0	0	0	0	0	0	8
New Mexico:										
Albuquerque	16,648	0	0	0	1	0	0	0	0	10

[1] Population Jan. 1, 1920.

City reports for week ended January 3, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
		Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
MOUNTAIN—continued										
Arizona:										
Phoenix	33,899	------	0	0	8	------	0	0	0	29
Utah:										
Salt Lake City	126,241	2	0	0	3	0	0	0	3	37
Nevada:										
Reno	12,429	0	0	0	0	0	0	0	0	3
PACIFIC										
Washington:										
Seattle	[1] 315,685	1	10	------	------	1	1	------	3	------
Spokane	104,573	7	0	------	------	0	0	------	2	------
Tacoma	101,731	1	1	0	1	0	0	0	0	27
Oregon:										
Portland	273,621	6	13	0	2	0	0	0	6	------
California:										
Los Angeles	666,853	2	------	0	23	1	------	0	------	266
Sacramento	69,950	0	4	0	3	0	0	0	0	17
San Francisco	539,038	0	0	0	15	0	0	0	1	177

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, est. expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	0	0	1	1	0	0	0	0	0
Fall River	1	1	0	0	0	0	0	0	0
Worcester	0	0	2	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	1	3	20	1	0	0	1	0	1
Syracuse	0	0	2	0	0	0	0	0	0
New Jersey:									
Camden	0	0	1	1	0	0	0	0	0
Pennsylvania:									
Philadelphia	2	1	4	0	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cleveland	0	0	1	0	0	0	0	0	0
Illinois:									
Chicago	0	0	3	1	0	0	0	0	0
Michigan:									
Detroit	1	0	2	1	0	0	0	2	0
Wisconsin:									
Milwaukee	1	0	2	1	0	0	0	0	0
WEST NORTH CENTRAL									
Iowa:									
Davenport	0	--------	1	--------	0	--------	0	0	--------
Missouri:									
St. Louis	0	0	1	0	0	0	0	0	0
Kansas:									
Topeka	1	1	0	0	0	0	0	0	0

City reports for week ended January 3, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, est. expectancy	Cases	Deaths
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	1	3	0	0	0	0	0	0
Virginia:									
Richmond	0	0	0	0	0	1	0	0	0
West Virginia.									
Wheeling	1	1	0	0	0	0	0	0	0
Georgia:									
Savannah	0	0	0	0	0	1	0	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Louisville	1	1	0	0	0	0	0	0	0
Tennessee:									
Memphis	0	0	0	0	2	0	0	0	0
Alabama:									
Birmingham	0	0	0	0	1	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	0	0	1	0	0	0	0	0	0
Shreveport	1	0	0	0	0	0		0	0
Texas									
Dallas	0	0	0	0	0	0	0	1	0
Houston	0	0	0	0	0	1	0	0	0
San Antonio	0	1	0	0	0	0	0	0	0
MOUNTAIN									
Nevada:									
Reno	0	0	0	0	0	0	0	1	1
PACIFIC									
Oregon:									
Portland	0	0	2	0	0	0	0	0	0
California:									
San Francisco	1	0	0	0	0	0	0	1	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended January 3, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, October 26, 1924, to January 3, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec 13	Dec. 20	Dec. 27	Jan. 3
Total	174	204	201	201	175	[2] 190	[3] 193	[4] 197	150	[4] 155
New England	219	194	204	209	166	258	[3] 208	221	189	258
Middle Atlantic	119	154	158	159	144	170	175	187	149	140
East North Central	156	207	183	168	173	165	167	185	134	151
West North Central	263	265	305	332	307	309	265	299	168	176
South Atlantic	266	301	221	262	260	[5] 173	201	150	134	146
East South Central	154	200	149	183	120	[6] 98	97	149	51	91
West South Central	185	213	274	209	125	144	200	195	116	148
Mountain	267	363	344	258	162	172	315	248	209	191
Pacific	226	209	273	281	128	252	273	[4] 207	226	[4] 129

MEASLES CASE RATES

	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec 13	Dec. 20	Dec. 27	Jan. 3
Total	43	56	58	72	66	[2] 112	[3] 128	[4] 143	105	[4] 158
New England	80	89	102	122	147	164	[3] 282	194	278	380
Middle Atlantic	57	73	68	78	79	105	120	115	235	121
East North Central	52	67	76	97	85	199	207	317	138	294
West North Central	15	15	21	29	10	25	35	19	10	10
South Atlantic	12	26	8	22	14	[5] 22	39	24	35	53
East South Central	0	11	11	11	0	[6] 0	6	11	0	17
West South Central	0	5	5	5	9	0	0	19	14	9
Mountain	29	19	38	38	29	19	48	57	19	115
Pacific	32	41	67	99	52	136	125	[4] 37	70	[4] 83

SCARLET FEVER CASE RATES

	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec 13	Dec. 20	Dec. 27	Jan. 3
Total	184	208	198	223	232	[2] 270	[3] 312	[4] 314	244	[4] 297
New England	239	283	335	385	437	544	[3] 602	552	512	609
Middle Atlantic	151	179	167	185	197	197	260	268	225	286
East North Central	190	200	194	225	228	257	234	311	230	243
West North Central	448	466	456	473	508	616	626	601	468	527
South Atlantic	116	136	118	146	128	[5] 171	252	213	132	203
East South Central	137	166	80	97	57	[6] 162	109	240	126	172
West South Central	70	116	83	65	93	125	162	185	65	83
Mountain	181	181	191	229	143	296	162	239	191	162
Pacific	116	145	116	174	168	197	218	[4] 134	133	[4] 138

SMALLPOX CASE RATES

	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec 13	Dec. 20	Dec. 27	Jan. 3
Total	24	25	35	34	38	[2] 58	[3] 43	[4] 42	41	[4] 40
New England	0	0	0	0	0	0	[3] 0	0	0	0
Middle Atlantic	1	2	0	3	5	5	1	2	2	3
East North Central	12	4	8	10	14	10	13	14	20	27
West North Central	145	170	207	176	236	417	255	209	205	129
South Atlantic	2	6	14	12	6	[5] 48	39	22	28	39
East South Central	51	46	69	120	74	[6] 204	177	314	183	372
West South Central	9	9	37	28	32	19	14	51	19	32
Mountain	0	10	67	19	10	19	19	29	48	48
Pacific	99	93	136	142	136	113	113	[4] 106	122	[4] 69

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Norfolk, Va., and Memphis, Tenn, not included in calculating the rate. Reports not received at time of going to press.
[3] Worcester, Mass., not included.
[4] Los Angeles, Calif., not included.
[5] Norfolk, Va., not included
[6] Memphis, Tenn., not included.

Summary of weekly reports from cities, October 26, 1924, to January 3, 1925—Annual rates per 100,000 population—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3
Total	19	22	19	24	29	[2] 45	[3] 43	[4] 56	35	[4] 37
New England	12	17	12	12	22	30	[3] 16	30	17	25
Middle Atlantic	18	12	17	23	46	71	68	101	57	58
East North Central	8	10	8	11	7	22	32	33	24	28
West North Central	19	19	6	17	4	8	17	15	19	4
South Atlantic	26	43	20	28	30	[5] 56	35	30	37	41
East South Central	69	80	114	80	109	[6] 63	57	51	34	40
West South Central	28	83	51	60	37	60	51	56	28	37
Mountain	48	86	76	19	19	10	19	10	0	0
Pacific	29	26	17	46	17	29	17	[4] 14	15	[4] 5

INFLUENZA DEATH RATES

	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3
Total	6	7	8	8	10	[2] 12	[3] 17	[4] 16	15	19
New England	2	12	0	5	5	17	[3] 5	15	15	3
Middle Atlantic	11	12	9	9	8	11	22	17	14	21
East North Central	3	3	3	5	11	9	13	9	16	10
West North Central	0	0	0	0	7	4	4	9	7	9
South Atlantic	6	6	8	12	14	[5] 11	22	22	14	26
East South Central	6	6	23	11	29	[6] 28	23	23	51	63
West South Central	15	5	36	15	25	31	36	41	15	51
Mountain	0	0	10	38	19	29	29	48	10	38
Pacific	4	0	20	0	8	8	4	[4] 17	12	12

PNEUMONIA DEATH RATES

	Nov. 1	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3
Total	110	118	125	120	130	[2] 153	[3] 159	[4] 172	157	203
New England	104	82	87	94	144	127	[3] 109	134	114	174
Middle Atlantic	137	154	149	152	152	188	201	191	178	226
East North Central	70	81	86	90	93	115	125	146	126	165
West North Central	61	63	70	79	74	63	88	68	92	101
South Atlantic	177	152	169	116	169	[5] 191	175	248	205	250
East South Central	120	137	203	206	246	[6] 211	217	297	206	303
West South Central	107	112	173	102	107	163	178	163	229	341
Mountain	57	76	95	143	124	210	200	276	219	229
Pacific	94	127	106	86	94	168	135	[4] 86	147	188

[1] Norfolk, Va , and Memphis, Tenn., not included in calculating the rate Reports not received at time of going to press.
[3] Worcester, Mass., not included.
[4] Los Angeles, Calif., not included.
[5] Norfolk, Va., not included.
[6] Memphis, Tenn., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28, 898, 350	28, 140, 934
New England	12	12	2, 098, 746	2, 098, 746
Middle Atlantic	10	10	10, 304, 114	10, 304, 114
East North Central	17	17	7, 032, 535	7, 032, 535
West North Central	14	11	2, 515, 330	2, 381, 454
South Atlantic	22	22	2, 566, 901	2, 566, 901
East South Central	7	7	911, 885	911, 885
West South Central	8	6	1, 124, 564	1, 023, 013
Mountain	9	9	546, 445	546, 445
Pacific	6	3	1, 797, 830	1, 275, 841

FOREIGN AND INSULAR

PLAGUE ON VESSEL

Steamship "Conde," at Marseille, France—Plague rat found.—A plague rat was reported found on the steamship *Conde*, of the Havraise Peninsulaire line, at Marseille, France, November 6, 1924. The vessel sailed November 12, 1924, for Tamatave, Madagascar.

CANADA

Communicable diseases—Ontario—Nov. 30–Dec. 27, 1924—Comparative.—Communicable diseases were reported in the Province of Ontario, Canada, during the four-week period ended December 27, 1924, as follows:

Disease	1924		1923	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis	6	4	1	1
Chancroid			9	
Chicken pox	852		1,087	
Diphtheria	364	27	457	24
Gonorrhea	110		168	
German measles	11		18	
Goiter	46	3	5	3
Influenza		13		9
Lethargic encephalitis	10	3	3	2
Measles	1,363	8	762	1
Mumps	588		306	1
Pneumonia		115		188
Poliomyelitis (infantile paralysis)	6	1	2	1
Scarlet fever	618	9	1,060	18
Smallpox	33		51	
Syphilis	95		169	
Tetanus		2		
Tuberculosis	123	64	166	85
Typhoid fever	85	12	40	11
Whooping cough	279	3	179	6

Smallpox prevalence in municipalities.—Occurrence was reported in 13 municipalities, the largest number of cases, viz, 5, being reported at Sherwood Township and at Stratford. One death was reported at Paris; one case each was reported by three municipalities.

CUBA

Communicable diseases—Habana—December, 1924.—During the month of December, 1924, communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Remaining under treatment Dec. 30, 1924	Disease	Cases	Deaths	Remaining under treatment Dec. 30, 1924
Chicken pox	2		1	Measles	9	1	2
Diphtheria	17	5	1	Paratyphoid fever	1		
Leprosy			9	Scarlet fever	3		3
Malaria [1]	100	1	37	Typhoid fever [1]	36	10	27

[1] A number of the cases of typhoid fever and malaria were from the interior of the island.

CZECHOSLOVAKIA

Communicable diseases—July-September, 1924.—During the period July to September, 1924, communicable diseases were notified in Czechoslovakia as follows:

Disease	Cases	Deaths	Province showing greatest number of cases and deaths
Anthrax	33	3	Slovakia, cases, 12; deaths, 2.
Cerebrospinal meningitis	31	10	Bohemia, cases, 9; deaths, 7.
Diphtheria	694	31	Bohemia, cases, 367; deaths, 17.
Dysentery	515	30	Slovakia, cases, 354; deaths, 23.
Malaria	75		Russinia, cases, 61.
Paratyphoid fever A	1		Bohemia.
Paratyphoid fever B	74	4	Bohemia, cases, 68; deaths, 3.
Rabies	7	7	
Scarlet fever	1,691	76	Moravia, cases, 616; deaths, 40.
Smallpox	1		Moravia.
Trachoma	644		Moravia, cases, 259.
Typhoid fever	2,065	105	Bohemia, cases, 637; deaths, 53.
Typhus fever	3		Russinia, cases, 3.

EGYPT

Status of plague.—During the week ended December 9, 1924, four cases of plague were reported in Egypt, occurring as follows: *Alexandria*, one case; *Port Said*, one case; *Suez*, two cases.

Summary.—From January 1 to December 9, 1924, 365 cases of plague were reported; previous year, corresponding period, 1,462 cases.

ESTHONIA

Typhoid fever—Paratyphoid—November, 1924.—During the month of November, 1924, 67 cases of typhoid fever and nine cases of paratyphoid fever were reported in the Republic of Esthonia. Population, 1,107,069.

FINLAND

Typhoid fever—Paratyphoid—November 1–15, 1924.—During the period November 1 to 15, 1924, 32 cases of typhoid fever and 195 cases of paratyphoid fever were reported in the Republic of Finland. Population, 3,402,593.

JAMAICA

Smallpox (reported as alastrim)—Nov. 30–Dec. 27, 1924.—During the four-week period ended December 27, 1924, 33 cases of smallpox (reported as alastrim) were notified in the Island of Jamaica, of which four cases occurred at Kingston.

LATVIA

Communicable diseases—October, 1924.—During the month of October, 1924, 3 cases of smallpox, 126 of typhoid fever, 5 of typhus fever, and 3 of paratyphoid fever were reported in the Republic of Latvia. Population, 2,000,000.

MADAGASCAR

Plague—Tananarive Province—November 1-15, 1924.—During the period November 1 to 15, 1924, 47 cases of plague with 42 deaths were reported in the province of Tananarive, Island of Madagascar. For distribution of occurrence according to locality and type, see page 186.

MALTA

Certain communicable diseases—October, 1924.—During the month of October, 1924, there were reported in the Island of Malta, 7 cases of lethargic encephalitis, 77 cases of Malta (undulant) fever, and 36 cases of typhoid fever with 5 deaths. Population, 216,702.

PANAMA CANAL

Communicable diseases—November, 1924.—During the month of November, 1924, communicable diseases were notified in the Canal Zone and at Colon and Panama, as follows:

Disease	Canal Zone	Colon	Panama	Nonresident	Total
Chicken pox	3	7	12		22
Diphtheria			2		2
Dysentery	1	1	2	4	8
Hookworm		7	50	54	111
Leprosy		1	1	2	4
Malaria	58	1	2	33	94
Measles		1	10		11
Meningitis	1		1	1	3
Mumps	2				2
Pneumonia	2	5	30		37
Scarlet fever				1	1
Tuberculosis	3	3	27		33
Typhoid fever				1	1
Whooping cough	2	3	2		7

SALVADOR

Quarantine on account of yellow fever raised.—The quarantine imposed in August, 1924, in the Canal Zone, Panama, against the Republic of Salvador, on account of yellow fever, was raised January 12, 1925.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended January 23, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Nov. 9-15, 1924: Cases, 2,003; deaths, 1,290.
Bombay	Nov. 23-29	1	1	
Siam:				
Bangkok	Nov. 16-22	1	2	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received During Week Ended January 23, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Canary Islands:				
Las Palmas				Stated to have been declared infected with human and rodent plague, Sept. 30, 1924.
Ceylon:				
Colombo	Nov. 23-Dec. 6	3	3	
Ecuador:				
Guayaquil	Dec. 1-15	2	1	Rats taken, 8,875; infected, 14.
Egypt				Dec. 3-9, 1924: Cases, 4. Jan. 1-Dec. 9, 1924: Cases, 365. Corresponding period, 1923, cases, 1,462.
Alexandria	Dec. 3-9	1		
Port Said	do	1		
Suez	do	2		
India				Nov. 9-15, 1924: Cases, 2,451; deaths, 1,730.
Bombay	Nov. 22-29	1	1	
Karachi	Nov. 30-Dec. 6	2	1	
Madagascar				Nov. 1-15, 1924: Cases, 47; deaths, 42.
Province—				
Tananarive	Nov. 1-15	47	42	
Tananarive	do	4	3	Bubonic, pneumonic, septicemic.
Other localities	do	43	39	Do.
On vessel:				
S. S. Conde				At Marseille, France, Nov. 6, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
British South Africa:				
Northern Rhodesia	Nov. 11-24	15		
Canada:				
British Columbia—				
Vancouver	Dec. 28-Jan. 3	21		
Manitoba—				
Winnipeg	do	10		
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33, occurring in 13 localities; corresponding period, 1923: Cases, 51.
China:				
Amoy	Nov. 23-29			Present.
Foochow	Nov. 16-Dec. 13			Do.
Hongkong	Nov. 9-15	1		
Shanghai	Dec. 7-13	1	1	Case, foreign; death, Chinese.
Czechoslovakia				Apr.-June, 1924. Case, 1, occurring in Province of Moravia.
Ecuador:				
Guayaquil	Dec. 1-15	2		
Egypt:				
Alexandria	Dec. 3-16	4		
Great Britain:				
New Castle on Tyne	Dec. 14-20	1		
India				Nov. 9-15, 1924 Cases, 814; deaths, 170.
Bombay	Nov. 23-29	3	2	
Karachi	Nov. 30-Dec. 13	7		
Indo-China:				
Saigon	Nov 16-22	1	1	Including 100 sq. km. of surrounding country.
Jamaica				Nov. 30-Dec. 27, 1924: Cases, 33 (reported as alastrim).
Kingston	Nov. 30-Dec. 27	4		
Java:				
East Java—				
Soerabaya	Nov. 9-15	77	23	
Latvia				Oct. 1-31, 1924: Cases, 3.
Mexico:				
Durango	Dec. 1-31		5	
Mexico City	Dec. 7-13	1		
Tampico	Dec. 21-31	3	3	
Vera Cruz	Dec. 29-Jan. 3		3	
Portugal:				
Lisbon	Dec. 14-20	10		
Oporto	Dec. 14-27	1	1	
Spain:				
Malaga	Dec. 21-27		11	
Tunis:				
Tunis	Dec. 16-29	9	12	

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received During Week Ended January 23, 1925—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Dec. 1-10	1		
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Iquique	Nov. 30-Dec. 6		2	
Talcahuano	Dec. 14-20		1	On Dec. 20, 1924, 8 cases present.
Valparaiso	Dec. 1-7		3	
Czechoslovakia				Apr.-June, 1924. Cases 3, occurring in Province of Russinia.
Egypt:				
Alexandria	Dec. 3-9	1	1	
Cairo	Oct. 29-Nov. 11	3	3	
Latvia				Oct. 1-31, 1924: Cases, 5.
Mexico:				
Durango	Dec. 1-31		1	
Mexico City	Dec. 7-13	8		
Poland				Oct. 5-11, 1924: Cases, 22; deaths, 2. Recurrent fever, 3 cases.
Spain:				
Malaga	Dec. 21-27		1	

Reports Received from December 27, 1924, to January 16, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo	Nov. 16-22	1		
India				Oct. 19-Nov. 8, 1924: Cases, 8,280; deaths, 4,832.
Calcutta	Oct. 26-Nov. 29	35	29	
Madras	Nov. 16-Dec. 6	41	26	
Rangoon	Nov. 9-29	5	2	
Indo-China				Aug 1-31, 1924: Cases, 7; deaths, 6. August, 1923: Cases, 13; deaths 10 native, and 1 fatal case European
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	do	2	2	
Cochin-China	do	4	3	
Siam:				
Bangkok	Nov. 9-15	2		

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Ponta Delgada	Dec 6-12	9	5	
British East Africa:				
Kenya—				
Uganda	Aug. 1-31	79	62	
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-22	4	3	One plague rodent.
China:				
Nanking	Nov. 23-Dec. 6			Present.
Ecuador:				
Guayaquil	Nov. 16-30	6	2	Rats taken, 8,802, found infected, 19.
Eygpt				Jan. 1-Dec. 2, 1924: Cases, 361. Corresponding period, year 1923—cases, 1,448.
City—				
Alexandria	Dec. 4	1	1	Bubonic.
Port Said	Dec. 1	1	1	
Suez	Dec. 3	1	1	
Hawaii				Dec. 9, 1924: Plague-infected rodent found in vicinity of Honokaa village.

[1] From medical officers of the Public Health Service, American consuls, and other sources. For reports received from June 28 to Dec. 26, 1924, see Public Health Reports for Dec. 26, 1924. The tables of epidemic diseases are terminated semiannually and new tables begun.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to January 16, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
India				Oct 19-Nov. 8, 1924: Cases, 7,640; deaths, 5,733.
Madras (Presidency)	Nov. 23-Dec. 6	182	128	
Rangoon	Oct. 26-Nov. 29	12	11	
Indo-China				Aug. 1-31, 1924. Cases, 13; deaths, 8. Corresponding period, 1923: Cases, 23; deaths, 21.
Province—				
Anam	Aug 1-31	2	2	
Cambodia	do	9	6	
Cochin-China	do	2		
Java:				
Cheribon district	Oct 14-Nov. 3		14	
Pekalongan district	do		29	
Soerabaya district—				
Soerabaya	Nov. 4			Epidemic. Seaport.
Tegal	Oct. 14-20		3	
Madagascar				Oct. 16-31, 1924: Cases, 36; deaths, 33.
Tananarive Province—				
Tananarive Town	Oct 16-31	2	2	Bubonic.
Other localities	do	34	31	Bubonic, 15; pneumonic, 7; septicemic, 9.
Straits Settlements:				
Singapore	Nov 9-15	1	1	

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Bolivia:				
La Paz	Nov. 1-30	12	7	
Brazil:				
Pernambuco	Nov. 16-22	21	4	
British South Africa:				
Northern Rhodesia	Oct. 28-Nov 10	28	2	In natives.
Canada:				
British Columbia—				
Vancouver	Dec 14-20	11		
Manitoba—				
Winnipeg	Dec. 7-13	4		
China:				
Amoy	Nov 9-22			Present.
Antung	Nov 17-23	1		
Foochow	Nov. 2-8			Do.
Ecuador:				
Guayaquil	Nov. 16-30	2		
Egypt				
Alexandria	Nov. 12-18	1		
Gibraltar	Dec. 8-14	1		
Great Britain.				
England and Wales	Nov 23-Dec. 6	184		
India				Oct. 19-Nov. 8, 1924: Cases, 2,243; deaths, 503.
Bombay	Nov. 2-22	5	4	
Calcutta	Oct. 26-Nov. 29	72	46	
Karachi	Nov. 16-22	2	1	
Madras	Nov 16-Dec 6	32	16	
Rangoon	Oct. 26-Nov. 29	32	9	
Indo-China				Aug. 1-31, 1924; Cases, 145; deaths, 54.
Province—				
Anam	Aug. 1-31	41	9	August, 1923: Cases, 177 (European, 20); deaths, 31 (European, 1).
Cambodia	do	24	8	
Cochin-China	do	72	30	
Tonkin	do	8	7	
Iraq:				
Bagdad	Nov. 9-15	1	1	
Java:				
East Java—				
Soerabaya	Oct. 19-Nov. 8	284	85	
Province—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov. 14	2		
Cheribon	Oct 14-Nov. 3	14		
Pasoeroean	Oct. 26-Nov. 1	9	1	
Pekalongan	Oct. 14-Nov. 3	20		
Mexico:				
Guadalajara	Dec. 2-29		1	
Mexico City	Nov. 23-29	1		
Tampico	Dec. 11-20	2	1	
Vera Cruz	Dec. 1-28		7	

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to January 16, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Portugal:				
Lisbon	Dec. 7-13	9		
Oporto	Nov 30-Dec. 6	2	1	
Russia				Jan. 1-June 30, 1924. Cases, 9,683.
Spain:				
Barcelona	Nov. 27-Dec. 10		4	
Cadiz	Nov 1-30		34	
Madrid	Dec 14-20		17	
Malaga	Oct 31-Nov. 13		40	
Valencia	Nov 30-Dec. 6	2		
Syria:				
Aleppo	Nov 23-29	1		
Tunis:				
Tunis	Nov. 25-Dec. 15	33	23	
Union of South Africa:				
Cape Province	Nov 9-15			Outbreaks.
Orange Free State	Nov 2-8			Do.
Transvaal	Nov 9-15			Do.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				
Algiers	Nov 1-30	1		
Bolivia.				
La Paz	do	2		
Chile				
Talcahuano	Nov 16-29		4	10 cases (estimated) present Nov. 22
Valparaiso	Nov. 25		1	
Egypt				
Cairo	Oct 1-28	6	4	
Mexico.				
Guadalajara	Dec 23-29		1	
Mexico City	Nov. 9-Dec. 6	43		
Palestine				Nov 12-Dec 8, 1924 Cases, 7.
Poland				Sept 28-Oct. 4, 1924; Cases, 28; deaths, 1.
Rumania.				
Constanza	Dec 1-10	1		
Russia				Jan 1-June 30, 1924 Cases, 92,000.
Turkey·				
Constantinople	Nov 15-Dec. 5	3	1	
Union of South Africa:				
Cape Province	Nov 9-15			Outbreaks.
East London	Nov 16-22	1		
Orange Free State	Nov. 9-15			Do.
Transvaal	do			Do.
Yugoslavia:				
Belgrade	Nov 24-Dec. 7	4		

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TREASURY DEPARTMENT

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1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of the public health.

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CONTENTS

PUBLIC HEALTH REPORTS

VOL. 40 JANUARY 30, 1925 No. 5

WORLD PREVALENCE OF HUMAN PLAGUE IN 1923*

The recent outbreak of human plague in Los Angeles, Calif., of both bubonic and pneumonic types, served to focus public attention for a short while in the United States on this ancient disease. The fact that there are endemic plague areas in this country tends to be lost sight of by the public in the relatively long intervals between outbreaks; the actual occurrence of human plague has again emphasized the possibility, in spite of constant vigilance, of an epidemic as long as infected rodents exist, and the necessity for a persistent campaign against this source of the disease.

A view of the world prevalence of plague points to another possibility—that there is always the chance of *new* endemic foci being established by imported infection. The world-wide distribution of the disease is not fully realized, perhaps, except by those whose especial duty it is to keep watch. Little appears in the current press about far-off epidemics or outbreaks. It may be pertinent, therefore, to summarize such information as is available concerning the world prevalence of human plague. Unfortunately, the more important data concerning plague-infected animals are too scanty to afford an adequate idea of the possible sources of the disease.

We have attempted, therefore, to utilize all official sources of published information on the prevalence of human plague during the year 1923. The compilation of these data has been greatly facilitated by the cumulative summaries published in the Public Health Reports (1) and by the systematic collection of epidemiological information by the Service of Epidemiological and Public Health Statistics of the Health Section of the League of Nations' Secretariat at Geneva (2). The publications of this service have, therefore, been freely used, and have been supplemented by the reports received by the Public Health Service and other publications containing summaries (3) (4) (5) (6). In spite of the multitude of sources of information from various countries, and in spite of the fact that plague is a universally notifiable disease, both by custom and in obedience to international sanitary conventions, it is ex-

* From the Statistical Office, United States Public Health Service.

tremely improbable that the available reports are complete. This is undoubtedly true so far as the number of cases is concerned, and it is quite likely that many localities where "sporadic" cases and even outbreaks have occurred are not included in the available data. We do not know, for example, what happened in interior China or Tibet. The reports for India, where the disease is most prevalent, do not show accurately the total number of cases, although there is every reason to believe that the reports of deaths are fairly complete for most of India. Any estimate or classification based on cases actually reported will fall considerably short of the actual incidence, and the lack of exact information on the fatality of the disease in different parts of the world precludes the possibility of accurate estimates of the number of cases based upon reported deaths.

TABLE 1.—*Cases of and deaths from plague notified throughout the world in 1923*

Locality	Cases	Deaths
AFRICA		
Algeria	5	3
Algiers	3	2
Oran	2	
St. Eugene		1
Angola	96	29
Canary Islands	46	27
Las Palmas	34	27
Teneriffe	10	
San Juan de la Rambla	2	
Egypt	1,519	725
Cairo	2	2
Alexandria	67	33
Port Said	51	28
Suez	47	24
Provinces of Lower Egypt	392	119
Provinces of Upper Egypt	960	519
Kenya	1,090	
Madagascar	698	479
Tananarive	690	472
Diego-Suarez	5	4
Antsirabe	2	2
Tamatave	1	1
French Morocco	134	21
Casablanca	2	
Rabat Region	5	
Gharb Region	127	21
Mauritius	139	119
Nyasaland	7	
Senegal	1,221	846
Dakar	17	5
Rufisque	294	236
Thies	349	234
Baol	11	12
Cayor	404	216
Sine Saloum	133	139
Tanganyika: Singida (subdistrict of Dodoma)	36	74
AFRICA—continued		
Tunisia	31	
Ben Gardane	29	
Tunis	2	
Uganda	948	914
Union of South Africa	20	12
St. Vincent Island (Cape Verde)	56	18
AMERICA		
Ecuador	126	42
Guayaquil	88	26
Brazil	53	34
Bahia	14	9
Pernambuco	16	4
Vino del Milagro	1	
Porto Alegre	22	21
Argentine Republic: Rosario	8	3
Hawaii: Honokoa	1	1
Mexico. Tampico	2	1
Paraguay. Asuncion	6	4
Peru	870	408
Ancash	6	
Arequipa	2	1
Cajamarca	138	47
Callao	15	9
Lambayeque	78	51
Libertad	185	90
Lima	294	136
Piura	152	74
United States: California	1	
Uruguay	3	1
Venezuela: Victoria	4	2
ASIA		
Celebes: Macassar	(1)	
Ceylon: Colombo	227	207
China:		
Amoy (Fokien Province)		33
Manchuria		1
Dutch East Indies		8,003
Hongkong	148	132
British India [2]		240,886

[1] Epidemic.

[2] See Tables 4 and 5 for distribution of plague in India.

Table 1.—*Cases of and deaths from plague notified throughout the world in 1923*—Continued

Locality	Cases	Deaths
ASIA—continued		
French Indo-China	1,040	844
Annam	111	78
Cochin-China	85	55
Cambodia	798	235
Iraq	708	413
Japan	1	1
Malay States (Federated)	11	10
Malay States (Unfederated) Johore		3
Palestine	21	4
Badrani	1	
Caiffa	2	1
Haiffa	3	
Jaffa	15	3
Persia		
Mohammerah City	71	45
Abadan	481	409
Siam	399	329
Bangkok	178	156
Siberia. Transbaikalia, Matsiewskaya, Borzia Station, Hatanhor	8	1
Straits Settlements. Singapore	55	60
Syria	21	
Beyrut	20	
Mount Libanon	1	

Locality	Cases	Deaths
AUSTRALIA		
Sydney	1	1
EUROPE		
France: St. Ouen, suburb of Paris	14	
Greece	41	
Athens	4	
Piraeus	26	
Lamia	1	
Syra	10	6
Italy: Torre Annunziata	1	
Portugal:		
Lisbon	15	2
Oporto		1
St. Michael Island	200	84
Castelo Branco	2	
Horta	1	
Russia:		
Kalmuk Region	[1] 11	[1] 7
Do	[2] 30	[2] 16
Government of Bukejev	[3] 334	[3] 310
Ural Region	[4] 90	[4] 89
Government of Astrakhan	14	14
Spain	52	
Barcelona	1	
Mijas	2	
Malaga	49	
Turkey. Constantinople	12	3

[1] July 14–25. [2] Dec 8–Feb. 18, 1924. [3] Oct 1–Mar. 8, 1924. [4] Oct 19–Feb 5, 1924.

In Table 1 the number of cases and deaths from plague (without distinction as to type) notified as having occurred in 1923 is set forth in considerable detail by countries and localities. In Figure 1 an attempt has been made to show the geographical distribution of the disease as well as the degree of its prevalence by countries.

Three extremely interesting points are suggested by this compilation of figures and the map, namely—

(1) The total incidence of the disease;

(2) Its world-wide prevalence; and

(3) The existence of not one or two but several, probably many, endemic areas.

Any assertion of what the total incidence of or mortality from plague in the world actually was during a given period of time would be unwarranted. At the same time, keeping in mind the incompleteness of the reports, it is possible to venture a crude estimate based on the information available. For the year 1923 a total of 255,362 deaths from plague were reported from all parts of the world. From those countries which reported both cases and deaths, a ratio of cases to deaths of about 1.5 was indicated. Even upon this rather high fatality rate (65 per cent), a total of 384,000 cases is indicated.

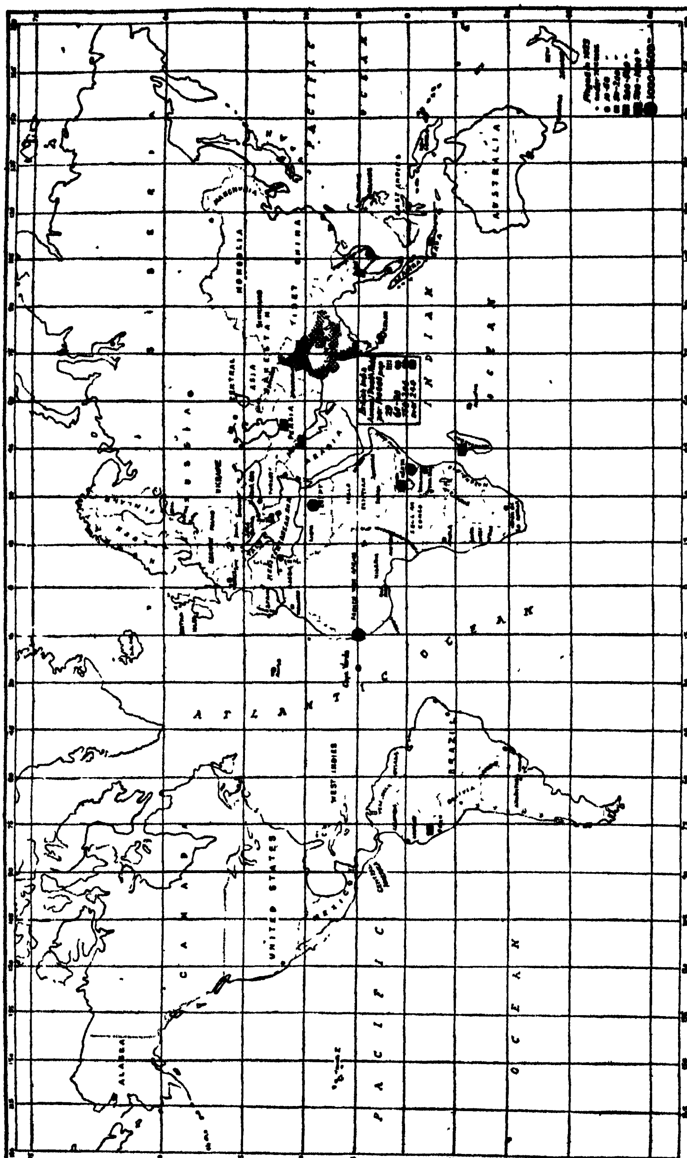

FIG. 1.—Redrawn from chart published in Epidemiological Intelligence No. 8, Health Section, League of Nations' Secretariat, Geneva

Probably it would be safe to say that not less than 400,000 cases of human plague occurred in the world during the year 1923, of which over 90 per cent were in India. Large as this figure is, it is almost insignificant when compared to the prevalence in certain prior years as, for example, 1903–4, 1904–5, or 1906–7 when over 1,000,000 deaths occurred in India alone each year. Even in 1917–18, the last great plague year in India, more than 800,000 people died in that country.

Yet, in spite of the concentration of its incidence in India, cases of plague were reported from nearly all parts of the world. No continent was entirely free from it, although only three cases were reported in North America in 1923 and one case (at Sydney) in Australia. It has been remarked that, upon the assumption that vectors of plague are in great measure limited to certain climates, the bubonic type of plague naturally is confined to certain latitudes. While it is perfectly clear that the disease is chiefly prevalent in certain areas of Africa and southern Asia and in islands in the same general latitude, it is equally evident from a glance at the map that epidemics actually occurred (and possibly endemic centers exist) in practically every well-inhabited quarter of the globe, except in those countries where a rigid quarantine has been maintained for many years or where international commerce touches lightly.

The fact that there is an endemic focus of plague in the United States possesses another significance than that of being a single source of danger; it is an evidence of the *spread of plague foci* in recent times. Four historic endemic areas in the world are usually referred to—the eastern and western slopes of the Himalayas, Arabia, and Uganda—from which the infection has spread and gained new footholds. The history of the disease is not easy to trace in the very incomplete records of the past, but the world-wide spread of the disease apparently has taken place in the last half century. More endemic centers have become established from which new foci may come. It is impossible, of course, from reports of cases or deaths alone to enumerate the present foci; careful surveys of the possible animal and insect carriers of the disease in all parts of the world would be necessary for accurate information. Even a rough interpretation of the present data is difficult because, without exhaustive research which would not always be profitable, it is impossible to distinguish between "sporadic" cases arising from endemic infection and "sporadic" cases that are imported. Yet if we adopt a crude but not wholly unreasonable limit and enumerate only the localities where, say, more than 10 cases or deaths were reported within the year or within recent years as possibly endemic, the number will be surprisingly large.

The extremely high prevalence in India, where 240,586 deaths were notified, and in Java, where 8,003 deaths were notified, marks these two countries as the principal plague areas at the present time. Other endemic plague areas with relatively high prevalence in 1923 were Egypt, Kenya, Senegal, Uganda, and the Azores (St. Michael Island), Madagascar, and Mauritius in Africa; Ecuador and Peru in South America; Ceylon, Java, French Indo-China, Persia, and Siam in Asia; and southeastern Russia in Europe. The endemic center in California was almost inoperative in so far as human beings were concerned.

Comparative data for several years previous to 1923 are given in Table 2 for most of the principal plague-infected localities.

TABLE 2.—*Prevalence of plague in most of the important endemic areas, 1919–1923*

[C=cases; D=deaths]

Country		1919	1920	1921	1922	1923
Africa:						
Algeria	C	4	32	195	19	6
Egypt	C	877	463	358	487	1,519
	D	473	269	153	228	725
Mauritius	C	-----	-----	375	98	139
	D	-----	-----	207	75	119
Nyasaland	C	-----	-----	2	0	7
Senegal	C	5,761	7,999	1,799	750	1,221
	D	4,276	5,879	1,241	428	846
Tanganyika	D	-----	-----	163	40	26
Uganda	D	1,022	1,732	5,871	1,305	914
Union of South Africa	C	0	12	33	10	20
	D	0	4	16	8	12
America:						
Ecuador—						
Guayaquil	C	66	187	270	56	94
	D	22	55	95	19	31
Hawaii	C	7	1	3	6	1
Peru	C	654	758	413	839	870
	D	340	392	205	379	408
United States: California	C	13	1	2	3	1
Asia:						
Ceylon	C	-----	-----	-----	151	227
	D	-----	-----	-----	100	207
Hongkong	C	464	138	150	1,181	148
	D	-----	-----	130	1,071	132
British India	D	74,284	99,368	69,682	76,369	237,057
Dutch East Indies. Java	D	-----	8,918	9,727	10,943	8,003
French Indo-China	C	-----	-----	1,099	1,268	1,040
	D	-----	-----	917	1,093	844
Iraq	C	-----	-----	137	685	708
Japan	C	3	22	2	118	1
	D	2	16	0	79	1
Palestine	C	-----	-----	4	64	15
	D	-----	-----	1	19	5
Siam	C	229	172	130	135	167
	D	182	135	103	110	127
Straits Settlements	C	19	61	27	39	56
	D	16	55	27	39	60
Australia	C	-----	-----	106	46	1

India and Egypt were the only countries showing a greatly increased prevalence in 1923 over that of recent years; though for several localities a somewhat greater prevalence in 1923 than in 1922 is indicated. For India and Egypt certain additional details concerning plague prevalence are available.

The 1923 epidemic in India was the most severe since 1918, but the tendency for the past 20 years has been toward a greatly diminished prevalence. In annual comparisons for India it is customary to use the figures for the "plague years," i. e., the 12-month period from July 1 to June 30, since the close of the calendar year comes during the upward trend of the epidemic curve for most of the Provinces. Thus in Table 3 the plague mortality is shown by 5-year

PLAGUE MORTALITY IN INDIA, 1898-1923.

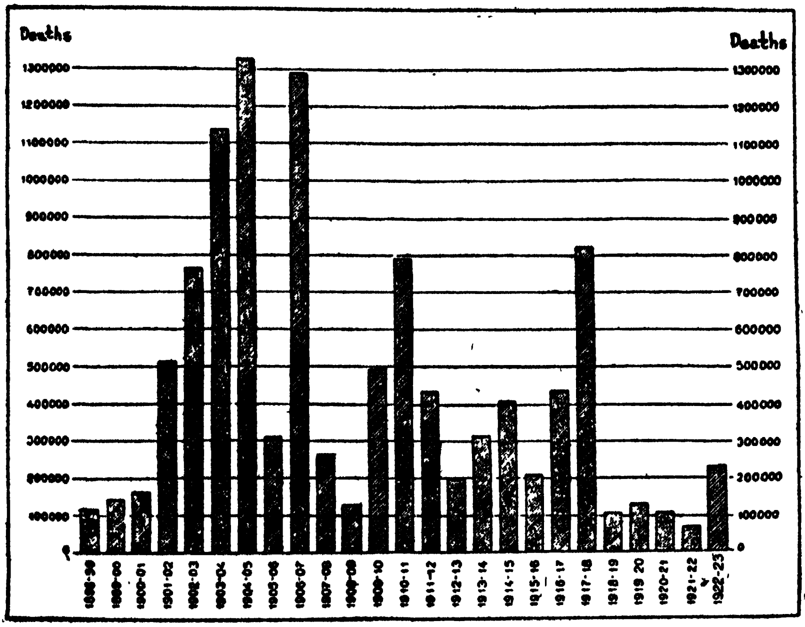

FIG. 2

periods for India as a whole, and the chief plague-infected Provinces from July, 1898, to June, 1923. The general decline is very marked both in the totals and the figures for the severely infected Provinces. Burma and Madras, the more mildly infected Provinces, show no decline in prevalence. Annual totals for the whole of India since the plague year 1898–99 are shown in the accompanying graph. The tendency for the severity of epidemics to decline in recent years and the wide variation in the severity of epidemics from year to year are both clearly shown.

Table 3.—*Plague mortality for quinquennial periods in certain Provinces of India and all of India, 1898–1923* [1]

Province	Population, census 1921	1898–1903	1903–1908	1908–1913	1913–1918	1918–1923	Total for 25 years
Punjab	20, 678, 393	439, 627	1, 647, 603	471, 350	433, 586	69, 340	3, 061, 506
United Provinces	45, 590, 946	115, 071	1, 002, 332	740, 288	528, 641	154, 763	2, 541, 095
Bombay Presidency	19, 338, 586	759, 778	824, 484	247, 185	463, 774	61, 080	2, 356, 301
Central Provinces	13, 908, 514	30, 828	141, 085	100, 175	106, 553	56, 505	435, 146
Bihar and Orissa	33, 998, 778	174, 449	345, 175	216, 351	219, 776	90, 482	1, 046, 233
Madras	42, 322, 270	24, 658	36, 948	34, 292	56, 782	50, 058	202, 738
Burma	13, 205, 564	16	26, 394	28, 453	35, 869	29, 081	119, 813
Total for all India	319, 075, 132	1, 707, 456	4, 325, 287	2, 042, 127	2, 179, 401	530, 170	10, 822, 331

[1] July 1 to June 30

From Epidemiological Intelligence No. 8, Health Section, League of Nations' Secretariat, Geneva, 1924

Table 4.—*Deaths from plague in India, 1919–1923*

Province	1919-20	1920-21	1921-22	1923-23
Punjab	6, 552	1, 959	7, 876	41, 703
United Provinces	23, 183	25, 374	12, 039	76, 311
Bombay	12, 344	9, 926	4, 606	14, 821
Bihar and Orissa	18, 682	17, 202	8, 559	29, 519
Central Provinces	17, 972	4, 149	7, 561	23, 603
Madras	6, 875	18, 217	7, 179	11, 441
Burma	5, 464	3, 964	6, 517	8, 154
Bengal	77	58	136	80
Central India	3, 972	374	239	816
Hyderabad	20, 861	9, 404	733	9, 792
Mysore	5, 269	9, 675	6, 771	5, 797
Rajputana	42	849	4	
Delhi				2, 574
Jind State				1, 822
North-West Frontier Provinces				917
Bengalore				468
Kolhapur State				37
Total	121, 593	101, 151	62, 220	227, 8 5

From Epidemiological Intelligence No. 8, Health Section, League of Nations' Secretariat, Geneva, 1924

The annual totals for several Provinces or administrative areas of India for the 4 most recent years are shown in Table 4. It is evident from these figures that plague has not been epidemic in the same year in all Provinces, but that each Province has shown a rather marked individual variation in severity. Thus the 1923 epidemic was severe, particularly in the Punjab and United Provinces. The complicated situation which is met with in a heavily infected area such as India has been well discribed in a few words by Dr. Norman White, after years of experience in India, as follows:

In most parts of India, rainfall in excess of normal at certain seasons of the year, with the consequent increased humidity that this entails, ensures conditions favourable to the epidemic evolution of plague. High atmospheric humidity at certain temperatures ensures conditions favourable to the development of the rat flea; it also, indirectly, favours the epidemic evolution of plague in several ways. As an example of the factors that influence the correlation between high atmospheric humidity and plague mortality, the following may be cited: In the Punjab and the United Provinces it is a common practice to hold up stocks of grain until the winter rains are well established. If the rains be plentiful (with

consequent high humidity) and the agricultural prospects promising, large quantities of grain are liberated and exported at a time when meteorological conditions are most favourable to the spread of plague. The added facilities thus afforded for the rapid diffusion of plague infection, by means of grain coming from and going to the rat-infested granaries of northern India, are of very great importance.

Taking all facts into consideration, there is unmistakable evidence that the prevalence of bubonic plague in India is on the wane. The plague situation in India is not so unmanageable now as it was a decade ago. The danger spots in each Province are known—places in which infection persists, and from which infection spreads year after year. The dangers inseparable from the rat-infested markets and grain stores, which, in spite of plague experience, still persist in every province, to the continued danger of the towns and villages concerned, are beginning to be realised. The uncontrolled traffic in grain and other rat-favoured merchandise still continues, however, to exercise its baneful influence, though each year provides striking evidence of the harm done. All these things demand attention if plague is ever to be eradicated from India and India kept plague free.

Of the 1,519 cases reported in Egypt in 1923, all but 18 were among the natives and over 60 per cent in the Provinces of Upper Egypt, chiefly Minia, Assiout, and Ghirga. Plague cases were notified in the important cities of Egypt as follows: Alexandria 67, Port Said 51, Suez 47, and Cairo 2. Most of the cases were bubonic in type, but 120 fatal cases of secondary pneumonic plague were reported.

Southeastern Russia has some important endemic foci of plague. In the Kalmuk region 11 cases and 7 deaths were reported in July; then no further cases were reported until a second outbreak between December 8, 1923, and February 18, 1924, when 30 cases and 16 deaths were reported. In the Government of Astrakan, 14 fatal cases were notified between December 24, 1923, and February 16, 1924. In the Ural region, 90 cases with 89 deaths were reported from October 19, 1923, to February 5, 1924. In the Kirghiz Republic (Government of Bukejev) 334 cases with 310 deaths were notified between October 1, 1924, and March 8, 1924. The principal epidemic in the previous year was reported in the Government of Bukejev, with 124 cases and 120 deaths notified from December 2, 1922, to February 28, 1923.

The fact that Peru is at present an important endemic area is not often commented upon in the literature, yet 408 deaths and 870 cases were reported in 1923 from eight localities, the principal reported centers being Lima, Libertad, Piura, and Cajamarca.

It has been suggested that the comparatively high ratio of cases to deaths indicates the occurrence of a relatively mild form of plague, but this does not necessarily follow. It may be due to a better system of reporting and more effective treatment, and there seems to be very good evidence that these factors must be considered

in attempting to analyze the reports of plague in both Peru and Ecuador.

The seasonal incidence of the disease differs. Even within India there are marked differences among the areas included in the reports. Taking the quarterly totals (Table 5) of plague deaths for the Provinces, where the disease has been most prevalent for 25 years as well as for 1923, it appears that in the eastern and north central section (Burma, Bengal, Bihar and Orissa, and the United Provinces) the season of greatest prevalence is clearly in the first half of the year, usually in the early spring; in the central, southern, and western section (Madras, Bombay, and the Central Provinces) the peak of incidence is considerably later in the year, usually in the autumn and the winter. For India in general a relatively low summer preva-

CASES OF PLAGUE NOTIFIED IN EGYPT, 1921-1923

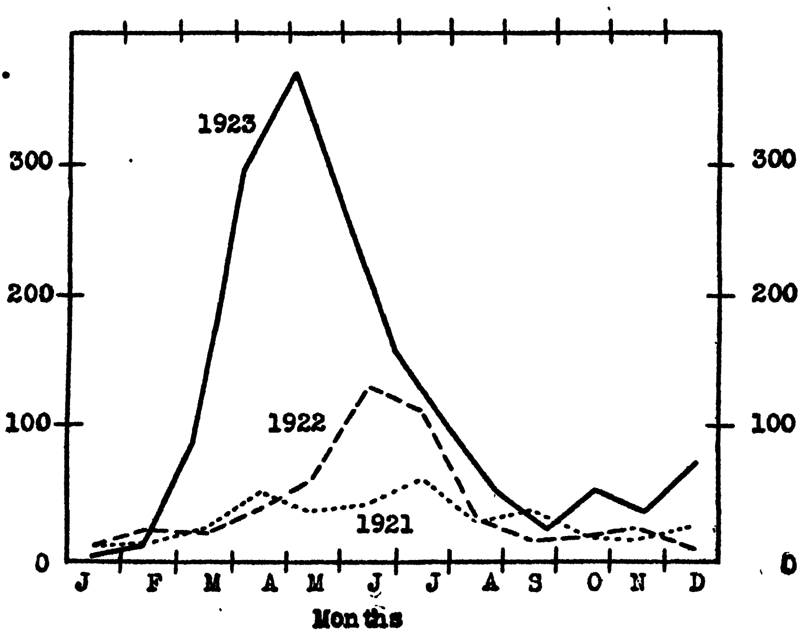

FIG. 3

lence of plague is indicated. This is in marked contrast to the situation in Egypt as shown by the graphs for 1921, 1922, and 1923 in Figure 3. Again, by reference to Table 6, we find that in Uganda, Kenya, and Tanganyika the summer season shows the highest incidence of the disease, although the peak did not occur in all of these countries in the same month. Even in such widely separated localities as Iraq and Hongkong we find a rather similar seasonal distribution. In Peru, on the other hand, the highest incidence occurred in January and February, 1923.

TABLE 5.—*Seasonal distribution of deaths from plague in India*

Province	Quarters of 1923				Total 1923	Quarterly average for 25 years				Annual average for 25 years
	I	II	III	IV		I	II	III	IV	
Bengal		80	2		82	1,187	1,354	137	111	2,789
Bihar and Orissa	20,357	7,131	119	1,215	28,822	27,261	10,031	591	3,937	41,821
United Provinces	53,239	16,442	303	4,104	74,088	59,615	30,276	1,205	10,459	101,555
Punjab	7,496	33,743	1,322	7,162	49,723	38,687	77,011	880	6,203	122,781
Central Provinces	18,241	1,843	2,056	4,157	26,297	9,372	1,302	1,748	5,091	17,514
Madras	5,286	884	3,123	2,426	11,719	3,314	342	1,564	2,901	8,121
Bombay	6,241	3,103	10,052	12,769	32,165	28,736	9,680	21,667	34,862	94,946
Burma	4,626	1,094	630	1,278	7,628	2,496	981	728	567	4,772

From Epidemiological Intelligence No. 8, Health Section, League of Nations' Secretariat, Geneva, 1924.

TABLE 6.—*Seasonal incidence of plague in 1923, by months*

[C=cases; D=deaths]

Country		Jan	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.	Oct	Nov.	Dec.
Africa:													
Algeria	C	0	0	0	0	2	0	0	3	0	0	1	0
Mauritius	C	18	6	8	2	6	4	3	8	8	25	26	25
	D	17	5	8	2	6	3	3	6	7	21	21	20
Tunis	C	0	0	0	29	0	0	1	0	0	0	1	0
Uganda	C	73	27	18	7	70	112	172	114	104	97	94	60
	D	73	27	15	5	66	114	164	107	104	94	89	56
Union of South Africa	C	0	0	0	0	0	0	0	0	0	7	4	9
	D	0	0	0	0	0	0	0	0	0	7	1	4
America:													
Peru	C	205	150	128	136	67	75	29	11	13	16	25	15
	D	85	72	55	62	24	49	15	5	8	8	19	6
Ecuador	C	5	14	15	1	1	0	5	13	8	15	7	42
	D	1	4	6	2	1	0	5	2	1	6	3	11
Asia													
Dutch East Indies	D	1,039	818	685	487	471	441	469	507	578	902	942	1,064
Iraq (Mesopotamia)	C	3	10	18	100	375	152	29	2	2	1	1	15
	D	1	8	8	51	236	86	9	1	1	0	0	12
Palestine	C	0	0	0	0	2	7	3	1	2	0	0	0
	D	0	0	0	0	2	1	0	0	1	1	0	0
Siam	C	38	37	17	22	25	12	9	4	0	0	0	3
	D	32	22	15	15	21	10	6	4	0	0	0	2

BY FOUR WEEKS ENDED—

Country		Jan. 27	Feb. 24	Mar. 24	Apr 21	May 19	June 16	July 14	Aug 11	Sept. 8	Oct 6	Nov. 3	Dec. 1	Dec. 29
Africa:														
Egypt [1]	C	3	11	80	295	371	267	155	102	48	21	51	35	71
	D	2	7	46	148	221	116	60	36	15	10	25	10	29
Kenya and the East African Republic	C	0	16	2	2	8	336	281	128	23	83	28	48	135
Tanganyika Territory	C	7	4	0	0	1	2	0	20	0	0	0	5	0
	D	6	4	0	0	1	2	0	12	0	0	0	1	0
Asia:														
Ceylon	D	21	25	11	16	10	9	17	7	23	16	10	11	24
Hongkong	C	2	1	2	10	13	58	36	17	6	3	0	0	0
	D	0	1	1	9	7	50	38	18	2	6	0	0	0
Malay States (Federated) [2]	C	0	0	0	0	0	11	0	0	0	0	0	0	0
	D	0	0	2	1	1	6	0	0	0	0	0	0	0
Singapore, Penang, Malacca	D	1	5	7	9	4	5	4	6	4	5	1	2	3

[1] Period ends one day later.

[2] Period ends one day earlier.

Most of the plague outbreaks reported were of the bubonic type, and it is difficult to get accurate information as to cases of true pneumonic type. Where an epidemic of bubonic plague is in prog-

ress and some pneumonic cases are reported, they are very likely to have been bubonic plague with secondary pneumonic complications, as was the case in Egypt. The 90 cases of plague reported in the Ural region of Russia in the winter of 1923–24 were definitely stated to be of pneumonic type, as was the outbreak in the Bukejev government of the Kirghiz Republic in the winter of 1922–23 (124 cases). In February, 1923, an epidemic of plague of pneumonic form was reported at Macassar, Celebes Island, but no details are available. One fatal case of pneumonic plague was reported at Honokaa, Hawaii, one in Portuguese West Africa, and two were reported at Las Palmas, Canary Islands. Nearly every month a portion of the cases reported from Madagascar are stated to be pneumonic plague. It is obvious that pneumonic plague epidemics have been relatively infrequent in recent years and that no exact information concerning the amount of the pneumonic type of the disease can be obtained from the available reports.

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SOME PRELIMINARY OBSERVATIONS FROM A STUDY OF WATER FILTRATION PLANTS ALONG THE OHIO RIVER [1]

By H. W. Streeter, Sanitary Engineer, United States Public Health Service

Introductory

At a session of this conference held at Columbus a year ago, the writer had the privilege of describing some studies then being undertaken by the United States Public Health Service for the main purpose of determining what are the practical limitations in the bacterial efficiency of current water purification processes, having in mind

[1] From the United States Public Health Service Laboratory for Investigation of Stream Pollution, Cincinnati, Ohio. Presented at the Fourth Ohio Conference on Water Purification, Cincinnati, November 14, 1924.

particularly those dealing with highly polluted river waters. An important part of this study has consisted of a survey of the actual performance of 10 municipal filter plants of the rapid sand type located directly on the Ohio River and taking their raw water supplies from that stream. The collection of data in connection with this phase of the study, which has been in progress throughout the past year, has been completed recently, and a preliminary analysis of the data has given some results which are considered of sufficient interest to members of the conference to merit presentation at this time. In this connection it should be emphasized, however, that conclusions of a final nature can not be drawn from the data until their analysis has been completed and the results have been compared with those obtained from other surveys and experimental studies now in progress.

The 10 plants included in the Ohio River group may be divided roughly into two subgroups according to the extent of treatment given the water prior to its filtration. In the first subgroup, which we shall designate as Group I, are five plants, employing sedimentation in two separate stages: three of them (at Steubenville, Cincinnati, and Louisville, respectively), using primary plain sedimentation followed by coagulation and secondary sedimentation, and the remaining two plants (at Ironton and Portsmouth) using sedimentation with coagulation at both stages. The second subgroup of plants, Group II, comprises five plants employing coagulation followed by a single stage of sedimentation, these plants being located, respectively, at East Liverpool, Huntington, Ashland, Evansville, and Henderson. Aside from certain structural differences, these latter five plants are very similar to each other in type.

The data collected from each plant have comprised daily laboratory and operation records such as are ordinarily included in the monthly summaries transmitted by plants in Ohio to the State department of health. A special effort has been made to secure comparable laboratory data, and with minor exceptions it is believed that the effort has been more than reasonably successful.

The laboratory data to which statistical treatment has been given thus far have been the 20° C. and 37° C. plate counts, both on standard agar medium, and the *B. coli* index, determined in the raw water and at each successive stage of purification up to and including the final chlorinated effluent. These data have covered a continuous period of a full year for all plants except the one at Henderson, Ky., where unforeseen circumstances necessitated discontinuing observations at the end of seven months. For all plants except the one at Louisville, Ky., the year of observation started on July 1, 1923, and ended on June 30, 1924. In the case of Louisville the year began and ended two months later, owing to delay in completing the necessary arrangements for collaboration. The discussion which follows

will be devoted almost entirely to what the bacteriological data have thus far revealed as to the conditions of raw water pollution now being encountered at the several Ohio River plants and as to the character of effluents being produced from such water.

RAW WATER CONDITIONS

Reference to Table 1 will show the average bacterial character of raw water delivered to each plant; likewise the extreme variations in monthly average figures obtained during the period of observation. From the average *B. coli* index figures it would appear that the highest bacterial pollution of the river at water-works intakes is encountered at Ironton, an indication which is borne out by the 20° C. and 37° C. plate counts. The average *B. coli* index of the raw water at Ironton was 14,900 for the year covered by the observations. The *B. coli* index figures and the 37° C. counts, taken together, indicate two other zones of relatively high bacterial pollution, namely, at East Liverpool and at Evansville.

TABLE 1.—*Averages, maxima, and minima of monthly mean bacterial counts observed in the raw water supplies of 10 Ohio River plants during the year, July 1, 1923, to June 30, 1924*

Plant	48-hour agar count, 20° C			24-hour agar count, 37° C			B coli index per 100 c c		
	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
East Liverpool				4,420	8,760	1,500	2,680	11,600	18
Steubenville	[1] 1,650	[1] 2,400	[1] 656	760	1,690	130	330	1,010	48
Huntington				1,590	3,450	550	2,370	5,280	500
Ashland				1,040	1,490	400	11,500	41,700	1,000
Ironton	19,600	46,600	4,000	4,190	10,000	1,420	14,900	23,900	9,930
Portsmouth	9,910	32,100	1,410	1,350	3,650	600	3,490	6,200	800
Cincinnati	18,300	70,500	455	1,000	3,750	150	2,980	9,910	170
Louisville [2]	12,500	25,800	1,100	1,890	3,670	735	2,220	5,140	90
Evansville	15,800	65,600	720	4,980	11,100	2,160	3,940	7,600	1,270
Henderson [3]				5,290	9,610	2,860	1,740	3,250	850

[1] Feb.-June, 1924. [2] Sept., 1923-Aug., 1924. [3] July, 1923-Jan., 1924.

The factors [1] of direct sewage pollution, tributary inflow, and natural purification, which determine the ranges of pollution in successive zones of the Ohio River are so complex that they can not be discussed in a brief space. Moreover, as this paper is concerned chiefly with the relations between quality of raw water and the efficiency of artificial processes of purification, it is unnecessary to enter here into any discussion of these matters further than to state that the intakes for all the cities included in this study are located well above pollution from the cities which they serve and deliver water of as good quality as is obtainable in the zones of the river

[1] For a discussion of these factors see Public Health Bulletin No. 143, A Study of the Pollution and Natural Purification of the Ohio River. Part II: Report on Surveys and Laboratory Studies (especially pp. 68-75 and 324-335).

which are accessible. It is also worthy of note that the raw waters at Portsmouth, Cincinnati, Louisville, and Evansville are roughly, of similar quality, as indicated both by average and maximum counts.

For individual months of the period the range of variation in average bacterial content of the rivers is shown to be high. East Liverpool, with a maximum monthly *B. coli* index of 11,600 and a minimum of but 18, displays the greatest variation, though at other points, notably at Ashland and Ironton, higher maxima are noted. For individual days the raw water at Ashland shows the greatest

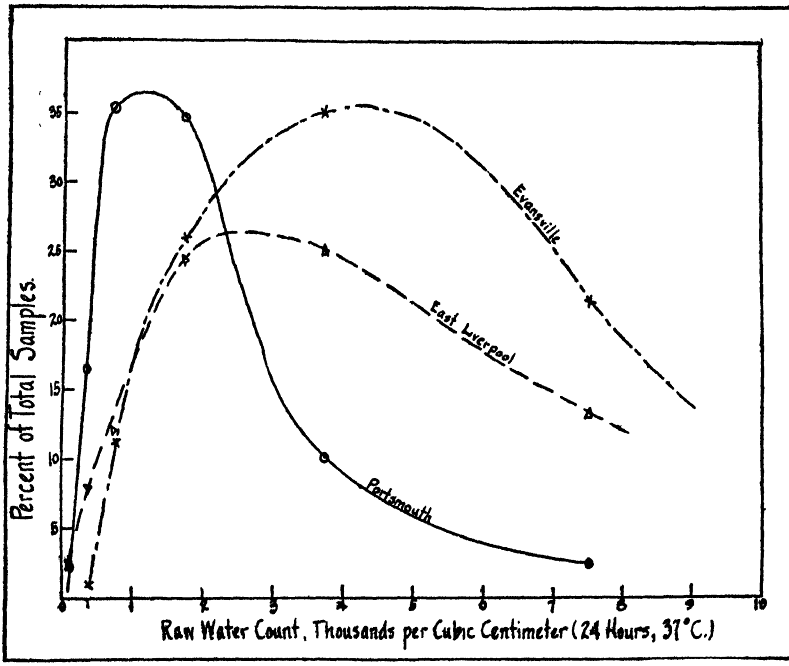

FIG. 1 —Frequency curves showing percentages of raw water samples giving bacterial counts of varying magnitudes

frequency of excessively high *B. coli* content, 7.4 per cent of the samples giving an index of over 100,000. The raw waters at East Liverpool, Ashland, Ironton, Portsmouth, Cincinnati, and Louisville all show more than 10 per cent of the samples having a *B. coli* index exceeding 10,000, the Ironton figure being 32 per cent.

In Figure 1 the character of frequency distributions obtained by plotting the percentages of the total number of raw water samples giving counts within specified ranges is illustrated by curves plotted from 37° counts on the raw water at East Liverpool, Portsmouth, and Evansville. These distributions, which are characteristic not only of the bacterial content of the raw water but also of that of the effluents from various stages of purification, are practically all of

the "skew" type illustrated in Figure 1. If, instead of plotting the actual counts as abscissae, we plot their logarithms, we obtain curves approaching very closely the symmetrical "normal frequency" curve, as shown in Figure 2. A number of other natural phenomena, such as rainfall, for example, tend to follow the same kind of frequency distribution.

The practical significance of this observation lies in the opportunity it affords for studying the possibilities for predicting on the basis of present observations, the frequencies with which the bacterial

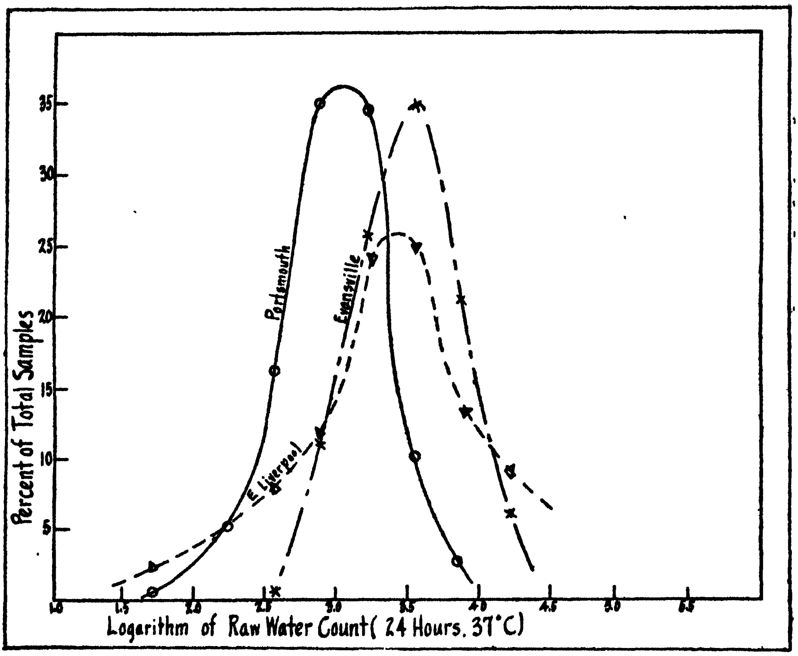

FIG. 2.—Curves of Figure 1 replotted with logarithms of raw water bacterial counts as abscissae

content of a given raw water or effluent may be expected to exceed certain specified limits as its average value increases from year to year. Without entering into a detailed discussion of this interesting phase of the subject, which would require too much space for the scope of the present paper, it may be noted that waters the bacterial content of which distributes itself in accordance with the type of frequency curve mentioned, tend to become disproportionately more dangerous as their average bacterial content increases, for the reason that the frequency with which their bacterial count exceeds certain higher limits may increase at a much faster rate than does its average value. This observation is in line with recent experience at a number of Ohio River plants, where the frequency of occurrence of raw water samples giving bacterial counts in the higher ranges has multiplied out of proportion to increases in the yearly average count. This

question is being given careful study in connection with the analysis of data from the various Ohio River and other plants, with a view to determining, if possible, whether there exists a critical limit in the average bacterial content of a raw water or an effluent beyond which a disproportionately rapid deterioration in its quality may be expected to occur during a fairly large proportion of a given period of time.

PURIFICATION EFFICIENCIES

Comparison of the various Ohio River plants with respect to their efficiencies of bacterial purification indicates some rather wide differences in a few individual cases, though on the whole the agreement between plants of similar type is shown to be reasonably close. This is particularly true of efficiencies measured in terms of the 37° count and the *B. coli* index, the 20° count giving somewhat less uniform figures.

In order to summarize in condensed form the average purification efficiencies observed for the group of Ohio River plants, taken as a whole, Table 2 has been prepared, giving the average percentages of bacteria *remaining* in the effluent from each stage of purification, as referred, first, to the raw water content and, second, to the influent water of that particular stage. The figures have been expressed as "per cents remaining" rather than as "per cents removed," in order to bring out more strikingly certain differences in the small quantities. The corresponding "per cent removed" is readily derivable from the figures as given, being 100 per cent minus the figure in each case.

TABLE 2.—*Average purification efficiencies of 10 Ohio River plants during observational year, as shown by percentages of raw and of influent water constituents, respectively, remaining in the effluent from each stage of purification*

	Per cent of raw water constitutent in—				Per cent of influent constitutent in—			
	Settled water	Applied water	Filter effluent		Settled water	Applied water	Filter effluent	
			Unchlorinated	Chlorinated			Unchlorinated	Chlorinated
Turbidity	33.8	8.9			33.8	20.7		
48-hour agar count, 20° C	33.0	10.8	4.1	0.72	33.0	26.3	38.3	18.8
24-hour agar count, 37° C	26.6	[1] 13.8	[2] 1.8	[3] 0.19	26.6	25.6	14.7	10.3
B. coli index	27.7	13.9	0.41	0.019	27.7	21.3	2.8	10.0

[1] Average for Group I plants=9.4 per cent; for Group II plants=18.2 per cent.
[2] Average for Group I plants=1.6 per cent; for Group II plants=1.9 per cent.
[3] Average for Group I plants=0.20 per cent; for Group II plants=0.19 per cent.

Based on the percentages derived from the 37° counts, as referred to the influent water, the bacterial efficiency of primary sedimentation is indicated as being about the same as that of secondary sedimenta-

tion, the "percentage remaining" figures being, respectively, 26.6 per cent and 25.6 per cent for the two stages, or the corresponding "percentages removed," 73.4 per cent and 74.4 per cent, respectively. Filtration, with a residual of 14.7 per cent and postfilter chlorination, with 10.3 per cent, show a slightly higher intrinsic efficiency than do the preliminary sedimentation stages, though the latter, of course, remove by far the greater proportion of the bacteria initially present in the raw water.

With one exception, the percentages derived from the 37° counts agree very closely with those based on the *B. coli* index. The exception noted refers to the much lower percentage (2.8 per cent) of *B. coli* in the filter effluent, when referred to the filter influent, as compared with the corresponding percentage (14.7 per cent) based on the 37° count. It is worthy of note that this discrepancy is found in the filtered water percentages for every individual plant in the study group, and at no other stage of purification is it manifest.

Based on the 37° count, the percentage of raw water bacteria remaining in the applied water averages 9.4 per cent for the plants of Group I, employing double sedimentation, and 12.8 per cent for those of Group II, employing single sedimentation. The advantage possessed by the former in the efficiency of removal of bacteria prior to filtration is thus shown to be considerable. Comparison of the percentages in the filtered and chlorinated effluents, however, indicates that this advantage does not extend beyond the filtration stage, at least to any marked extent. The percentages of raw water bacteria in the filter effluent are 1.6 per cent for Group I plants and 1.9 per cent for Group II plants, whereas in the final chlorinated effluent they are 0.20 per cent and 0.19 per cent, respectively. (*B. coli* results).

As regards the relation of bacterial purification efficiencies to the bacterial content of the raw or the influent water, the data thus far have indicated that such a relation exists though not always well defined nor manifest at every stage of purification. In general, the over-all percentage efficiency of purification tends to increase with the raw water count at a diminishing rate, with a tendency to become asymptotic to a fairly well-defined maximum value, apparently representing the upper limit of efficiency attainable by a given process. The type of relationship is illustrated in Figure 3 by two curves, one based on average data for three selected plants of Group I and the other on similar data for two plants of Group II, showing the decrease in the percentage of raw water bacteria remaining in the final effluent as the raw water count (37°) increases. The tendency for the residual percentages to reach a definite minimum is marked in both cases.

BACTERIAL QUALITY OF EFFLUENTS

As regards the average bacterial quality of effluents produced by the 10 Ohio River plants, the results of *B. coli* tests indicate that with the aid of chlorination a majority of the plants have been delivering effluents satisfying the present Treasury Department standard,[1] when considered as an average over the entire year. The highest average *B. coli* index for a single month recorded for any one of the plants was 2.2 per 100 c. c., two other plants having maxima of 1.8 and 1.9, respectively.

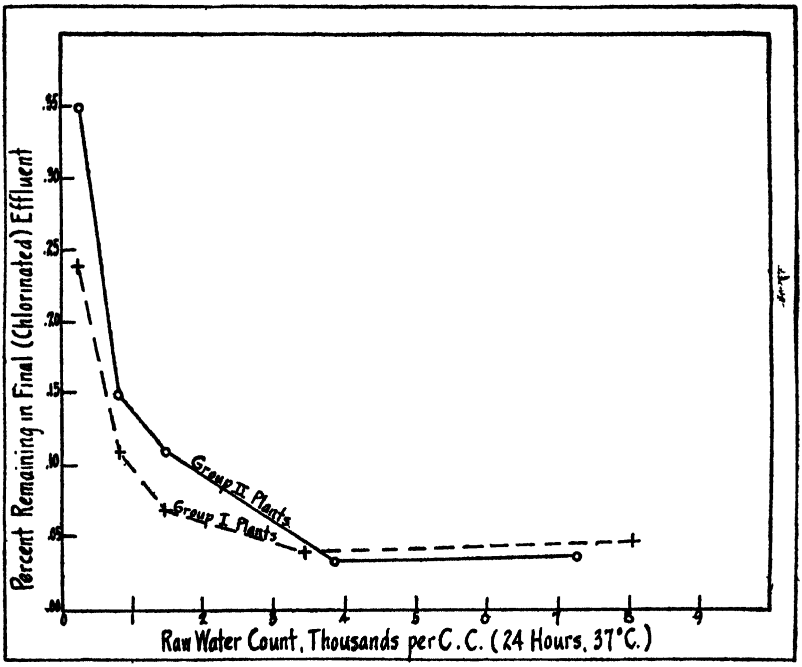

FIG. 3.—Relation between raw water bacterial counts and percentages of raw water bacteria remaining in final effluent

It is of interest to note the extent to which the same chlorinated effluents would satisfy, or fail to satisfy, the revised[2] Treasury Department standard with respect to average density of *B. coli*. In this case we find that three of the 10 plants delivered chlorinated effluents giving a positive test for the *B. coli* group in more than 10 per cent of the standard 10 c. c. portions tested (the actual figures being 37 per cent, 12.2 per cent, and 15.8 per cent, respectively). At

[1] See reprint No. 232, from the Public Health Reports, Vol. 29, No. 45, Nov. 6, 1914.

[2] The revised Treasury Department standard, as yet unpublished, specifies, as to bacterial content, substantially: (*a*) that not more than 10 per cent of the total number of standard 10 c. c. portions tested shall show the presence of organisms of the *B. coli* group, and (*b*) that not more than 5 per cent of all the standard samples shall show three or more positive tests out of the five 10 c. c. portions comprised in any single sample.

two of these three plants, more than 5 per cent of the samples (16.2 per cent and 6.8 per cent, respectively) gave three or more positive tubes out of each five tubes tested. Seven of the ten plants, therefore, delivered chlorinated effluents satisfying both provisions of the revised Treasury Department *B. coli* standard, and one of the remaining three plants satisfied the requirement as to the percentage of standard samples giving not more than three out of five positive 10 c. c. portions.

As regards the quality of the unchlorinated filter effluents, a considerably less favorable record is indicated. Taking the mean of the 12 monthly average *B. coli* index numbers as a measure of quality, we find that of the nine plants reporting results on the unchlorinated filter effluent, five gave an average index greater than 2.0 per 100 c. c. and seven an index greater than 1.0 per 100 c. c. All but one of the nine plants gave one or more monthly average indices greater than 2.0 and all of them exceeded an index of 1.0 in one or more months.

To sum up this phase of the matter, a large majority of the plants appear to be able to deliver chlorinated filter effluents meeting either the original or the revised Treasury Department standard with respect to *B. coli* content, when their record is considered for periods of a month or a year. Practically all of them, however, are unable to meet the standard without the aid of chlorination; that is to say, filtration processes alone, whether used in conjunction with single or with double coagulation and sedimentation, are unable to cope successfully with the present density of bacterial pollution of the Ohio River, if the measure of success be taken as the ability to meet either the original or the revised Treasury Department *B. coli* standard.

RELATION OF BACTERIAL CHARACTER OF EFFLUENTS TO THAT OF INFLUENTS

In a preliminary study of the performance of two Ohio River filtration plants, made by the Public Health Service several years ago,[1] evidence was found of an interesting and highly significant relation between the bacterial content of effluents delivered by water purification processes and the corresponding bacterial content of their influents. Thus it was found that whenever an increase or a decrease in the bacterial content of the influent occurs, there is a general tendency toward a corresponding, though not necessarily proportionate, change in the bacterial content of the effluent, either from a purification plant when considered as a whole, or from a given stage of the purification process. The practical importance

[1] The Loading of Filter Plants. H. W. Streeter. Jour. Am. W. W. Assoc., March, 1922; also reprint No. 737 from the Public Health Reports, Mar. 31, 1922, pp. 741-753.

of this relation, if confirmed as a matter of more general experience, lies in the possibility it offers for forecasting with some precision the limit of raw water pollution under which a purification plant of given type may be expected to deliver consistently an effluent of specified bacterial quality. To those who are concerned with the control of the pollution of streams used as sources of purified municipal water supplies, this question is one of primary importance in considering the specific limitations which must ultimately be imposed upon pollution of the raw water.

The results of the present survey of Ohio River plants have confirmed the existence of this relation in the case of every individual plant included in the survey group. In Tables 3 and 4 are given the results, in terms of the 37° count and the *B. coli* index, respectively, obtained by combining separately the data for plants of Group I and Group II into a table showing the corresponding bacterial counts observed at each successive stage of purification when grouped and averaged according to the individual raw-water counts falling within specified ascending ranges. With three exceptions in the two tables combined, it is noted that an increase in raw-water count is consistently accompanied by an increase in the effluent count at each successive stage of purification. The three exceptions noted are due principally to the undue weight unavoidably given to an irregular result from a single plant; in fact two of them (in Table 4) are based on observations available only at a single plant.

TABLE 3.—*Relation between raw-water count and corresponding counts in effluents at successive stages of purification*

[24-hour agar count, 37° C.]

Raw water count range	Average bacterial count per c. c.				
	Raw	Settled	Applied	Filtered	Disinfected
Group I plants					
0-500	221	68	29	3.1	0.5
501-1,000	826	228	108	12.1	1.0
1,001-2,000	1,480	328	123	7.8	1.1
2,001-5,000	3,440	739	232	18.4	1.3
Over 5,000	8,040	1,060	251	22.5	4.0
Group II plants					
0-500	286	----------	92	17	1.0
501-1,000	793	----------	181	25	1.5
1,001-2,000	1,530	----------	376	40	3.0
2,001-5,000	3,390	----------	626	58	5.9
Over 5,000	9,460	----------	1,950	278	22.4

TABLE 4.—*Relation between raw water B. coli index and corresponding indices at successive stages of purification*

[*B. coli* index per 100 c. c.]

Raw water B. coli index range	Average B. coli index per 100 c. c.				
	Raw	Settled	Applied	Filtered	Disinfected
Group I plants					
0-10	10	6.4	4.3	1.3	0.12
10-100	100	64	39	2.1	.20
100-1,000	1,000	361	126	3.8	.31
1,000-10,000	10,000	1,590	301	4.2	.59
Group II plants					
0-10	10	----------	7.9	2.6	1.2
10-100	100	----------	72	3.5	.68
100-1,000	1,000	----------	480	4.4	.96
1,000-10,000	10,000	----------	2,640	4.9	1.5
10,000-100,000	100,000	----------	1,800	6.2	3.5

An inspection of the *B. coli* figures in Table 4 shows that plants of the more highly elaborated type of Group I can be expected usually to deliver chlorinated effluents meeting the revised Treasury Department standard with a raw-water *B. coli* index in excess of 10,000 per 100 c. c. For plants of the Group II type, the limiting raw-water index would appear to be slightly in excess of 1,000 per 100 c. c.

In citing these figures, it should be emphasized that they are merely tentative and subject to the possibility of further revision after a more detailed analysis of the data has been completed. It may prove desirable, for example, further to subdivide the plants of Group I into two subgroups, one being represented by the plants at Ironton and Portsmouth, which employ not only double sedimentation but continuous double coagulation, and the other by plants of the Steubenville-Cincinnati-Louisville type, which use double sedimentation but not double coagulation. A preliminary comparison of the data from these two subgroups of plants has clearly indicated the advantage of double coagulation as a measure for further increasing the bacterial purification efficiency of plants employing primary plain sedimentation.

The limitations of space do not permit an elaboration of some other interesting angles of this study; for example, as to what it has thus far shown concerning the relation of raw-water turbidity to bacterial-purification efficiency. The relation appears to be a definite one, though the extent to which it is influenced by the fact that increased amounts of coagulants are usually applied when the raw-water turbidity increases, has not been given a sufficiently thorough study to justify any conclusions as to whether the mere presence of turbidity or some other contingent factor, such as coagulant dosage, has the more direct influence on the percentage efficiency of bacterial removal.

CONCLUSION

From the data thus far analyzed, the following definite conclusions may be drawn with reference to water-purification plants treating Ohio River water:

1. With the continuous and effective use of chlorine disinfection as a reinforcement to filtration, the Ohio River plants, considered as a group, apparently are fully able to deliver effluents of such bacteriological quality as is generally considered safe for a very large proportion of the time. Without the aid of chlorination, they undoubtedly would be unable to do so.

2. The type of plant represented by Group I, employing two stages of sedimentation, is more efficient in bacterial removal than the type represented by Group II, employing but a single stage of sedimentation. Of the Group I type, plants employing coagulation with both stages of sedimentation are more efficient than those using plain sedimentation as the primary stage.

3. Earlier observations as to the existence of a well-defined relation between the bacterial content of effluents and that of influents of water-purification processes have been confirmed by the results obtained from every individual Ohio River plant thus far studied. As far as the Ohio River plants included in this study are concerned, therefore, the possibility exists for forecasting the extent of deterioration in their effluents from a given increase in raw-water pollution, with plants of the highest efficiency here represented.

In considering the first of these three conclusions it may well be said that while the extremely high bacterial efficiency shown by the various Ohio River plants during the past year's survey has been an encouraging sign, their inability, as a group, to produce bacterially satisfactory effluents without the aid of chlorination virtually means that the last line of defense as at present established has been reached in the purification of Ohio River water. The next line of defense which suggests itself is long-time preliminary storage, but this measure would be costly in all cases and probably impracticable in some instances; hence the problem of meeting further encroachments of pollution in the Ohio River has definitely entered the phase when serious attention must be given to some plan for restricting further increase in the sewage pollution of the river.

VITAL STATISTICS FOR NEW YORK CITY, 1924

The following is taken from the Weekly Bulletin of the Department of Health of the city of New York for January 10, 1925:

The health of the city for the year 1924 was exceptionally good. The number of deaths reported during the year was 71,252, as com-

pared with the average for the immediately preceding five years of 73,432, a decrease of 2,180 deaths.

Those causes which showed a materially decreased mortality were influenza, a decrease of 1,696; tuberculosis of the lungs, 1,220; diarrheal diseases under five, 1,023; diphtheria and croup, 248; scarlet fever, 143; acute respiratory diseases, 538; and tuberculous meningitis, 100. Those causes showing materially increased mortalities were as follows: Chronic degenerative diseases, 1,906, which includes chronic organic heart diseases, chronic Bright's disease, diseases of the arteries, and cerebral apoplexy; cancer, an increase of 642 deaths; typhoid fever, 48 deaths; poliomyelitis, 26; appendicitis, 94; cirrhosis of the liver, 22; accidental deaths, 253; homicides, 63; and suicides, 34.

The great saving of life was under five years of age, there being 2,459 fewer deaths than in the five-year average. The great loss was at ages 65 years and over, there having been exactly 1,000 more deaths reported in 1924 than in the five-year average.

In all, 32,950 people died in institutions; 22,903 in tenements and apartment houses; 12,561 in private dwellings, and 634 in hotels.

Mortality from principal causes, 1924, and corrected average for preceding five years

	Corrected average preceding five years	Deaths reported year 1924	Increase	Decrease
Total deaths, all causes	73,432	71,252		2,180
Typhoid fever	136	184	48	
Measles	489	506	17	
Scarlet fever	223	80		143
Whooping cough	334	382	48	
Diphtheria and croup	962	714		248
Influenza	2,245	549		1,696
Pulmonary tuberculosis	6,000	4,780		1,220
Other tuberculous diseases	908	807		101
Cancer	5,915	6,557	642	
Diseases of arteries	3,014	3,667	653	
Organic heart disease	12,854	15,134	2,280	
Pneumonia (all forms)	9,315	9,152		163
Diarrheal diseases under 5 years	2,206	1,183		1,023
Bright's disease and nephritis	4,760	3,701		1,059
Puerperal diseases	715	679		36
Congenital debility and malformations	4,009	3,865		144
Violent deaths (excluding suicides)	4,255	4,571	316	
Suicides	799	833	34	
All other causes	14,293	13,908		385
Total births reported	131,264	130,426		838
Total marriages reported	62,069	62,254	185	

INFANTILE MORTALITY

The infantile mortality rate for the year was 68 per 1,000 live births, as compared with the five-year average rate of 76—a saving of 8 babies out of every 1,000 born alive.

In all, 130,426 births were reported during the year, a decrease of 838.

The Bulletin states:

"Formerly, the health of the baby was a local problem and emphasis was placed on family care. To-day the complex character of living conditions causes it to assume a much broader aspect, and community control can not be avoided. The factors that must be considered when dealing with this subject are: Housing, sanitation, overcrowding, social factors, pure water, pure milk, prevention of contagion, and out-of-door facilities.

"The best criterion of a people's health, perhaps of a people's civilization, is the rate of infant mortality. This is measurable. The rate is reckoned upon the basis of 1,000 births, e. g., a rate of 70 means 70 deaths under 1 year for each 1,000 babies born alive.

"The control of infant mortality spells 'well baby.' It is essential, therefore, to study its causation and the means employed to do away with these causes.

"The principal reasons for infant mortality may be set down as: Prenatal, those affecting the mother; postnatal, those affecting the child. Under the caption 'prenatal' one thinks of: Tuberculosis, syphilis, alcoholism, poverty, overcrowding, unhygienic surroundings, lack of proper food, manual labor on the part of the mother. One can not but be struck by the interrelation of these various causes and the bearing they must necessarily have upon one another."

MOSQUITO BREEDING IN WATER BARRELS[1]

INSTRUCTIVE INCIDENT IN CAMPAIGN AGAINST MOSQUITOES AT A NAVAL OPERATING BASE

The following information is taken from the sanitary report of the United States Naval Operating Base, Hampton Roads, Va., for the month of September, 1924:

"The sources of the mosquitoes noted in last month's report were located at Sewalls Point coal pier and the Virginian Railway coaling station in nine barrels of water used for controlling fires. Seven of these barrels were emptied, and the superintendents of the two places promised to keep the remaining barrels oiled. This was not accomplished, however, until thousands of *Culex* mosquitoes had been blown over the base by the then prevailing southerly wind. These mosquitoes immediately stocked every available body of water—of which the frequent rains, unfortunately, supplied many—in the made ground on the north side of the base. Although nearly 4 tons of niter cake and 150 gallons of crude oil were used during the month, reducing the breeding to a minimum, we still have thousands of *Culicidæ*. Thorough surveys were made at three units on the base for *Anopheles*, but none could be found. *Culex* larvæ were collected at three places and the containers either treated or destroyed. Several water holes were filled during the month."

[1] From the United States Naval Medical Bulletin for January, 1925.

DIGEST OF CURRENT PUBLIC HEALTH COURT DECISION

Ordinance authorizing acquisition of land for garbage disposal purposes upheld.—(Supreme Court of Illinois.) The city of Chicago has power to acquire land for use in the disposal of garbage and other waste matter, and the city ordinance passed June 13, 1923, providing for the acquisition of certain specified property to be used for the above-mentioned purposes, is valid. (Consumers' Co. *v.* City of Chicago et al., 145 N. E. 114.)

DEATHS DURING WEEK ENDED JANUARY 17, 1925

Summary of information received by telegraph from industrial insurance companies for week ended January 17, 1925, and corresponding week of 1924. (From the Weekly Health Index, January 20, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ending January 17, 1925	Corresponding week, 1924
Policies in force	58, 396, 301	54, 691, 101
Number of death claims	12, 125	11, 314
Death claims per 1,000 policies in force, annual rate	10. 8	10. 8

Deaths from all causes in certain large cities of the United States during the week ended January 17, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, January 20, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Jan. 17, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Jan. 17, 1925 [2]
	Total deaths	Death rate [1]		Week ended Jan. 17, 1925	Corresponding week, 1924	
Total (62 cities)	7, 405	14. 2	[3] 13. 3	907	[3] 888	
Akron	23			4	5	44
Albany [4]	34	14. 8	15. 4	1	5	22
Atlanta	99	22. 2	16. 5	19	11	
Baltimore [4]	275	18. 0	15. 3	34	32	99
Birmingham	66	16. 7	17. 1	7	12	
Boston	252	16. 8	14. 8	47	38	124
Bridgeport	50			8	3	127
Buffalo	130	12. 2	11. 6	15	15	61
Cambridge	33	15. 3	14. 0	2	10	34
Camden	33	13. 4	18. 2	3	8	49
Chicago [4]	677	11. 8	11. 5	106	94	94
Cincinnati	138	17. 6	16. 1	10	7	59
Cleveland	184	10. 2	11. 9	27	37	67
Columbus	73	13. 9	12. 6	10	6	94
Dallas	61	16. 4	11. 4	11	7	
Denver	73			8	13	
Des Moines	25	8. 7	10. 4	3	3	51
Detroit	253			61	49	103
Duluth	22	10. 4	10. 1	5	2	106
Erie	23			2	2	39
Fall River [4]	36	15. 5	19. 4	3	9	43
Flint	16			3	9	49
Fort Worth	46	15. 7	7. 0	9	3	

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1923. Cities left blank are not in the registration area for births.
[3] Data for 61 cities.
[4] Deaths for week ended Friday, January 16, 1925.

Deaths from all causes in certain large cities of the United States during the week ended January 17, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, January 20, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Jan. 17, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Jan. 17, 1925
	Total deaths	Death rate		Week ended Jan. 17, 1925	Corresponding week, 1924	
Grand Rapids	36	12.5	8.4	5	3	78
Houston	60			7	5	
Indianapolis	92	13.4	12.9	7	14	48
Jacksonville, Fla	35	17.4	16.8	2	2	44
Jersey City	86	14.2	9.4	11	9	77
Kansas City, Kans	40	16.9	12.4	9	5	190
Kansas City, Mo	89	12.6	12.0	9	9	
Los Angeles	273			21	19	58
Louisville	87	17.5	12.3	9	6	79
Lowell	34	15.2	17.6	3	7	52
Lynn	18	9.0	8.5	0	3	0
Memphis	57	17.0	13.0	6	5	
Milwaukee	97	10.1	11.9	19	22	87
Minneapolis	108	13.2	12.9	15	12	80
Nashville [4]	41	17.2	19.4	9	8	
New Bedford	20	7.7	16.1	2	5	33
New Haven	49	14.3	6.8	9	3	116
New Orleans	181	22.8	20.5	23	16	
New York	1,610	13.8	12.7	172	193	69
Bronx Borough	157	9.1	11.1	17	29	59
Brooklyn Borough	524	12.2	11.2	63	53	66
Manhattan Borough	733	16.0	15.1	72	92	72
Queens Borough	134	12.2	10.6	14	12	69
Richmond Borough	62	24.2	18.8	6	7	108
Newark, N. J	120	13.8	11.2	17	18	78
Norfolk	31	9.6	11.4	4	6	71
Oakland	53	10.9	13.5	2	4	23
Omaha	42	10.3	10.3	3	4	29
Paterson	28	10.3	11.5	5	2	84
Philadelphia	608	16.0	15.0	67	74	84
Pittsburgh	223	18.4	16.2	32	27	112
Portland, Oreg	64	11.8	14.4	6	6	62
Providence	61	13.0	14.8	7	11	56
Richmond	73	20.4	15.3	10	6	121
Rochester	75	11.8		7		55
St. Louis	257	16.3	12.5	23	17	
St. Paul	58	12.3	13.0	7	7	60
Salt Lake City [4]	30	12.0	15.0	6	4	94
San Antonio	84	22.1	18.8	13	15	
San Francisco	180	16.8	17.8	12	14	69
Schenectady	25	12.8	9.9	2	4	56
Seattle	59			4	7	41
Somerville	27	13.8	13.0	4	4	107
Spokane	18			0	0	0
Springfield, Mass	32	10.9	11.6	5	3	74
Syracuse	48	13.1	11.9	2	8	25
Tacoma	30	15.0	13.2	2	2	48
Toledo	66	12.0	11.9	8	6	72
Trenton	49	19.4	15.7	4	3	65
Utica	26	12.6	10.9	2	1	41
Washington, D. C	133	13.9	15.2	17	8	95
Waterbury	22			4	5	88
Wilmington, Del	47	20.1	13.5	8	7	182
Yonkers	26	12.1	11.4	5	3	110
Youngstown	45	14.7	6.0	5	3	63

[4] Deaths for week ended Friday, January 16, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended January 24, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	1
Chicken pox	68
Diphtheria	25
Dysentery	2
Influenza	467
Influenza reported as "Devil's grip"	3
Malaria	17
Measles	19
Mumps	52
Ophthalmia neonatorum	1
Pellagra	1
Pneumonia	137
Scarlet fever	18
Smallpox	292
Tetanus	1
Trachoma	8
Tuberculosis	25
Typhoid fever	9
Whooping cough	30

ARIZONA

	Cases
Chicken pox	14
Diphtheria	4
Measles	53
Mumps	16
Pneumonia	1
Scarlet fever	1
Smallpox	15
Tuberculosis	45
Whooping cough	7

ARKANSAS

	Cases
Chicken pox	86
Diphtheria	12
Hookworm disease	4
Influenza	201
Malaria	28
Measles	53

ARKANSAS—continued

	Cases
Mumps	35
Ophthalmia neonatorum	1
Pellagra	5
Scarlet fever	12
Smallpox	12
Trachoma	3
Tuberculosis	6
Typhoid fever	6
Whooping cough	21

CALIFORNIA

	Cases
Cerebrospinal meningitis—Ukiah	1
Diphtheria	151
Influenza	53
Lethargic encephalitis.	
Healdsburg	1
Los Angeles	1
Measles	48
Poliomyelitis:	
Oakland	1
Sacramento	1
San Diego County	1
Santa Clara County	1
Scarlet fever	174
Smallpox:	
Los Angeles	58
Los Angeles County	26
Oakland	12
Orange County	12
Scattering	71
Typhoid fever	11

COLORADO [1]

(Exclusive of Denver)

	Cases
Chicken pox	150
Diphtheria	18
Measles	5

[1] For two weeks ended Jan. 24, 1925.

COLORADO—continued

	Cases
Mumps	40
Pneumonia	11
Scarlet fever	58
Smallpox	1
Tuberculosis	43
Typhoid fever	3
Whooping cough	6

CONNECTICUT

	Cases
Cerebrospinal meningitis	1
Chicken pox	99
Diphtheria	44
German measles	32
Influenza	4
Lethargic encephalitis	2
Measles	42
Mumps	31
Pneumonia (all forms)	101
Scarlet fever	183
Septic sore throat	2
Tuberculosis (all forms)	32
Typhoid fever	1
Whooping cough	67

DELAWARE

	Cases
Chicken pox	1
Diphtheria	2
Measles	2
Mumps	6
Pneumonia	3
Scarlet fever	4
Tuberculosis	3
Whooping cough	6

FLORIDA

	Cases
Diphtheria	7
Influenza	63
Malaria	4
Pneumonia	3
Scarlet fever	1
Smallpox	3
Typhoid fever	12

GEORGIA

	Cases
Chicken pox	12
Diphtheria	3
German measles	1
Hookworm disease	1
Influenza	115
Malaria	1
Mumps	5
Pneumonia	28
Scarlet fever	3
Smallpox	1
Tuberculosis	15
Typhoid fever	1
Whooping cough	5

ILLINOIS

	Cases
Cerebrospinal meningitis:	
Cook County	1
Knox County	1
Woodford County	1
Diphtheria:	
Cook County	89
Scattering	52

ILLINOIS—continued

	Cases
Influenza	37
Lethargic encephalitis—Cook County	5
Measles	421
Pneumonia	391
Scarlet fever:	
Cook County	281
Edgar County	8
McLean County	9
Madison County	14
St. Claire County	11
Scattering	132
Smallpox:	
Lake County	8
Madison County	8
Ogle County	8
St. Claire County	12
Scattering	25
Tuberculosis	242
Typhoid fever	32
Whooping cough	301

INDIANA

	Cases
Cerebrospinal meningitis—Lake County	1
Chicken pox	142
Diphtheria	42
Influenza	62
Measles	100
Mumps	4
Pneumonia	24
Scarlet fever:	
Allen County	15
Elkhart County	19
Huntington County	18
Kosciusko County	25
Lake County	11
La Porte County	10
Parke County	8
St. Joseph County	16
Vigo County	12
Scattering	98
Smallpox.	
Jefferson County	10
Kosciusko County	12
Vigo County	13
Scattering	56
Tuberculosis	39
Typhoid fever	9
Whooping cough	39

IOWA

	Cases
Diphtheria	21
Scarlet fever	64
Smallpox	33

KANSAS

	Cases
Cerebrospinal meningitis	1
Chicken pox	177
Diphtheria	47
Influenza	4
Measles	8
Mumps	380
Pellagra	1
Pneumonia	40
Scarlet fever	151
Smallpox	23
Tuberculosis	56
Typhoid fever	5
Whooping cough	51

LOUISIANA

	Cases
Cerebrospinal meningitis	1
Diphtheria	17
Influenza	67
Malaria	3
Pneumonia	43
Scarlet fever	31
Smallpox	38
Tuberculosis	23
Typhoid fever	27

MAINE

Chicken pox	41
Diphtheria	27
German measles	1
Influenza	17
Measles	8
Mumps	116
Pneumonia	7
Scarlet fever	26
Tuberculosis	5
Typhoid fever	4
Vincent's angina	3
Whooping cough	3

MARYLAND [1]

Cerebrospinal meningitis	1
Chicken pox	67
Diphtheria	29
German measles	4
Influenza	128
Lethargic encephalitis	2
Measles	17
Mumps	63
Ophthalmia neonatorum	2
Pneumonia (all forms)	118
Scarlet fever	92
Septic sore throat	3
Tetanus	1
Tuberculosis	33
Typhoid fever	8
Typhus fever	1
Whooping cough	92

MASSACHUSETTS

Cerebrospinal meningitis	2
Chicken pox	283
Conjunctivitis (suppurative)	15
Diphtheria	107
German measles	161
Hookworm disease	1
Influenza	124
Lethargic encephalitis	8
Measles	380
Mumps	102
Ophthalmia neonatorum	35
Pneumonia (lobar)	158
Poliomyelitis	3
Scarlet fever	388
Septic sore throat	4
Trachoma	2
Trichinosis	4
Tuberculosis (all forms)	154
Typhoid fever	8
Whooping cough	140

[1] Week ended Friday.

MICHIGAN

	Cases
Diphtheria	98
Measles	149
Pneumonia	108
Scarlet fever	302
Smallpox	21
Tuberculosis	49
Typhoid fever	11
Whooping cough	120

MINNESOTA

Chicken pox	191
Diphtheria	52
Measles	8
Pneumonia	1
Scarlet fever	272
Smallpox	79
Tuberculosis	82
Typhoid fever	2
Whooping cough	23

MISSISSIPPI

Diphtheria	9
Scarlet fever	6
Smallpox	21
Typhoid fever	4

MISSOURI

Cerebrospinal meningitis	2
Chicken pox	97
Diphtheria	88
Influenza	24
Lethargic encephalitis	1
Measles	6
Mumps	39
Pneumonia	29
Scarlet fever	310
Smallpox	15
Trachoma	15
Tuberculosis	51
Typhoid fever	1
Whooping cough	11

MONTANA

Diphtheria	5
Scarlet fever	30
Smallpox	39
Typhoid fever	2

NEW JERSEY

Chicken pox	203
Diphtheria	88
Influenza	14
Measles	89
Pneumonia	177
Scarlet fever	245
Smallpox	14
Typhoid fever	9
Whooping cough	267

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	3
Diphtheria	83
Influenza	38

NEW YORK—continued

Disease	Cases
Lethargic encephalitis	6
Measles	195
Pneumonia	245
Poliomyelitis	1
Scarlet fever	359
Smallpox	18
Typhoid fever	25
Whooping cough	203

NORTH CAROLINA

Disease	Cases
Cerebrospinal meningitis	1
Chicken pox	165
Diphtheria	49
German measles	1
Measles	21
Scarlet fever	45
Septic sore throat	3
Smallpox	84
Typhoid fever	1
Whooping cough	92

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Disease	Cases
Diphtheria	16
Smallpox	17
Typhoid fever	18

OREGON

Disease	Cases
Chicken pox	60
Diphtheria:	
Portland	21
Scattering	9
Mumps	15
Pneumonia	[1] 9
Poliomyelitis	1
Scarlet fever:	
Portland	9
Scattering	20
Smallpox:	
Portland	10
Columbia County	17
Scattering	8
Tuberculosis	33
Typhoid fever	2
Whooping cough	8

SOUTH DAKOTA

Disease	Cases
Chicken pox	17
Diphtheria	3
Mumps	3
Pneumonia	1
Scarlet fever	31
Smallpox	1
Tuberculosis	1
Typhoid fever	2
Whooping cough	2

TEXAS

Disease	Cases
Anthrax	1
Chicken pox	141
Dengue	14
Diphtheria	84
Dysentery (epidemic)	13

[1] Deaths.

TEXAS—continued

Disease	Cases
Influenza	4,226
Leprosy	1
Lethargic encephalitis	3
Measles	66
Mumps	163
Ophthalmia neonatorum	4
Paratyphoid fever	1
Pellagra	25
Pneumonia	302
Rabies (human)	2
Scarlet fever	61
Smallpox	43
Tetanus	1
Trachoma	4
Tuberculosis	55
Typhoid fever	37
Whooping cough	58

VERMONT

Disease	Cases
Chicken pox	42
Diphtheria	3
Measles	2
Mumps	55
Scarlet fever	31
Whooping cough	17

VIRGINIA

Disease	Cases
Smallpox—Montgomery County	8

WASHINGTON

Disease	Cases
Chicken pox	94
Diphtheria	32
Measles	69
Mumps	117
Pneumonia	2
Poliomyelitis	1
Scarlet fever	54
Smallpox	27
Tuberculosis	29
Typhoid fever	1
Whooping cough	8

WEST VIRGINIA

Disease	Cases
Diphtheria	12
Scarlet fever	14
Smallpox	6
Typhoid fever	4

WISCONSIN

Disease	Cases
Milwaukee:	
Chicken pox	59
Diphtheria	17
German measles	114
Influenza	2
Lethargic encephalitis	2
Measles	185
Mumps	63
Ophthalmia neonatorum	1
Pneumonia	7
Scarlet fever	13
Smallpox	1
Tuberculosis	19
Whooping cough	20

WISCONSIN—continued

Scattering:	Cases
Chicken pox	226
Diphtheria	47
German measles	3
Influenza	33
Measles	102
Mumps	286
Ophthalmia neonatorum	1
Pneumonia	20
Poliomyelitis	1
Scarlet fever	159

WISCONSIN—continued

Scattering—Continued.	Cases
Smallpox	48
Tuberculosis	23
Typhoid fever	3
Whooping cough	92

WYOMING

Chicken pox	14
Measles	1
Mumps	1
Scarlet fever	16
Whooping cough	4

Reports for Week Ended January 17, 1925

NEBRASKA	Cases
Chicken pox	28
Diphtheria	17
Measles	3
Mumps	10
Pneumonia	2
Scarlet fever	15
Smallpox	24
Typhoid fever	5
Whooping cough	4

NORTH DAKOTA	Cases
Chicken pox	13
Diphtheria	1
Measles	6
Mumps	2
Pneumonia	7
Scarlet fever	58
Smallpox	7
Tuberculosis	2
Whooping cough	6

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
October, 1924										
Nebraska	1	178					2	104		8
November, 1924										
Nebraska	1	94	9				1	120		2
December, 1924										
Delaware	1	13	6		2			6		1
Idaho	2	20	1					22		3
Illinois	2	664	82	6	815		9	1,516	166	231
Louisiana	3	101	98	24	11	1	2	60	53	157
Maryland	1	218	476	1	86	0	2	378		63
Nebraska		50	3				1	69		2
New York	11	1,520	330	6	925		44	2,263	51	784
North Carolina	0	314			82		1	215	152	27
North Dakota		29			64		10	167	69	
Oklahoma	5		535	59	9	6	1	174	27	217
Rhode Island	0	95	6	0		0	0	103		15

RECIPROCAL NOTIFICATION, DECEMBER, 1924

Notifications regarding communicable diseases sent during the month of December, 1924, to other State health departments by departments of health of certain States

Referred by—	Diphtheria	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever
Connecticut	1	2			
Illinois		1	1	1	
Massachusetts					3
Minnesota			47	58	2
New York	1	7			13
New Jersey					1
Washington		1			

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

Los Angeles, Calif.—The following items are taken from the report of plague-eradicative measures in Los Angeles, Calif., for the week ended January 10, 1925:

Number of rats examined during week ended Jan. 10, 1925	3, 903
Number of rats found to be plague infected	1
Number of squirrels examined during week ended Jan. 10, 1925	215
Number of squirrels found to be plague infected	0
Total number of rats examined to Jan. 10, 1925	31, 612
Total number of rats found to be plague infected	71
Total number of squirrels examined to Jan. 10, 1925	1, 093
Total number of squirrels found plague infected	0

Last case of human plague, Jan. 6, 1925.

Oakland, Calif.—From December 13, 1924, to January 10, 1925, 10 rats were found to be plague infected at Oakland, Calif.

New Orleans, La.—The following items are taken from the report of plague-eradicative measures in New Orleans, La., for the week ended January 10, 1925:

Number of vessels inspected	271
Number of inspections made	947
Number of vessels fumigated with cyanide gas	28
Number of rodents examined	4, 133
Number of rodents found to be plague infected	0
Total number of rodents examined to Jan. 10, 1925	13, 755
Total number of rodents found to be plague infected	5

SMALLPOX AT PORT ARTHUR, TEX.

Under date of January 19, 1925, 12 cases of smallpox were reported at Port Arthur, Tex.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended January 10, 1925, 35 States reported 1,736 cases of diphtheria. For the week ended January 12, 1924, the same States reported 2,518 cases of this disease. One hundred and four cities, situated in all parts of the country and having an aggregate population of more than 28,800,000, reported 931 cases of diphtheria for the week ended January 10, 1925. Last year, for the corresponding week, they reported 1,373 cases. The estimated expectancy for these cities was 1,300 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty States reported 2,233 cases of measles for the week ended January 10, 1925, and 13,096 cases of this disease for the week ended January 12, 1924. One hundred and four cities reported 1,191 cases of measles for the week this year and 4,994 cases last year.

23313°—25†——3

Scarlet fever.—Scarlet fever was reported for the week as follows: 35 States—this year, 4,157 cases; last year, 3,889; 104 cities—this year, 2,038 cases; last year, 1,718; estimated expectancy, 1,031 cases.

Smallpox.—For the week ended January 10, 1925, 35 States reported 889 cases of smallpox. Last year, for the corresponding week, they reported 936 cases. One hundred and four cities reported smallpox for the week as follows: 1925, 316 cases; 1924, 345 cases; estimated expectancy, 78 cases. These cities reported 19 deaths from smallpox for the week this year, 13 of which occurred at Minneapolis.

Typhoid fever.—Three hundred and ninety-one cases of typhoid fever were reported for the week ended January 10, 1925, by 34 States. For the corresponding week of 1924 the same States reported 219 cases. One hundred and four cities reported 198 cases of typhoid fever for the week this year, and 81 cases for the week last year. The estimated expectancy for these cities was 49 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 104 cities as follows: 1925, 1,147 deaths; 1924, 1,177 deaths.

City reports for week ended January 10, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	17	2	3	0	0	0	45	1
New Hampshire:									
Concord	22,408	0	1	0	0	0	1	0	0
Vermont:									
Barre	[1] 10,008	0	0	1	0	0	0	5	0
Burlington	23,613	6	1	0	0	0	0	2	3
Massachusetts:									
Boston	770,400	70	68	47	3	2	80	7	23
Fall River	120,912	4	6	3	2	2	1	0	3
Springfield	144,227	8	4	5	1	2	50	7	3
Worcester	191,927	13	6	7	1	0	5	0	1
Rhode Island:									
Pawtucket	68,799	9	2	5	0	0	0	0	1
Providence	242,378	0	13	15	0	0	0	0	3
Connecticut:									
Bridgeport	[1] 143,555	1	9	7	2	1	0	1	3
Hartford	[1] 138,036	3	8	9	0	0	1	1	6
New Haven	172,967	55	5	1	0	0	21	0	5

[1] Population Jan. 1, 1920.

City reports for week ended January 10, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	31	30	8	1	1	54	15	9
New York	5,927,625	231	227	202	24	19	40	26	287
Rochester	317,867	15	12	1	0	1	5	37	5
Syracuse	184,511	15	11	8	0	0	0	12	3
New Jersey:									
Camden	124,157	12	5	10	1	2	14	1	5
Newark	438,699	34	23	14	7	0	53	8	27
Trenton	127,390	4	8	5	2	2	9	0	2
Pennsylvania:									
Philadelphia	1,922,788	159	79	96		9	71	41	96
Pittsburgh	613,442	74	29	10		5	84	34	16
Reading	110,917	23	5	3	0	0	3	4	0
Scranton	140,636	3	6	3	0	0	0	0	8
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	20	16	5		5	1	2	14
Cleveland	888,519	141	39	27	7	5	1	6	21
Columbus	261,082	23	7	2	0	0	0	5	8
Toledo	268,338	25	9	13	0	0	2	2	6
Indiana.									
Fort Wayne	93,573		4						
Indianapolis	342,718	80	20	5	0	1	2	7	20
South Bend	76,709	5	1	5	0	0	10	0	1
Terre Haute	68,939	6	2	0	0	0	0	0	1
Illinois:									
Chicago	2,886,121	159	150	67	15	4	273	18	82
Cicero	55,968	5	3	3	0	0	1	0	0
Peoria	79,675	13	1	0	0	0	0	1	1
Springfield	61,833	2	2	4	2	2	1	22	4
Michigan:									
Detroit	995,668	91	78	34	6	2	8	7	43
Flint	117,968	13	11	2	0	0	2	0	0
Grand Rapids	145,947	10	6	0	0	1	13	2	4
Wisconsin:									
Madison	42,519	22	1	0	0	0	1	182	0
Milwaukee	484,595	91	24	18	2	1	247	53	0
Racine	64,393	37	2	1	0	0	1	3	3
Superior	[1] 39,671	1	1	0	0	0	1	0	1
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	13	2	0	0	0	2	0	3
Minneapolis	409,125	59	22	0	0	0	0	8	6
St. Paul	241,891	38	18	16	0	0	0	21	7
Iowa:									
Davenport	61,262	4	1	0	0		0	0	
Des Moines	140,923	1	4	5	0		0	0	
Sioux City	79,662	6	2	1	0		0	1	
Waterloo	39,667	4	0	0	0		0		
Missouri:									
Kansas City	351,819	14	13	3	5	5	2	9	12
St. Joseph	78,232	3	4	0	0	0	1	1	3
St. Louis	803,853	47	66	36	1	1	4	4	
North Dakota:									
Fargo	24,841	21	0	1	0	0	0	32	1
Grand Forks	14,547	1	1	1	0		0	0	
South Dakota:									
Aberdeen	15,829	1		1	0		1	0	
Sioux Falls	29,206	1	1	5	0		0	0	
Nebraska:									
Lincoln	58,761	7	3	2	0	0	2	0	0
Omaha	204,382	26	6	1	0	0	0	0	6
Kansas:									
Topeka	52,555	21	2	2	0	0	0	159	2
Wichita	79,261	36	4	3	0	0	0	0	1

[1] Population Jan. 1, 1920.

City reports for week ended January 10, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	7	2	4	0	0	0	1	5
Maryland:									
Baltimore	773,580	59	33	33	74	7	4	4	59
Cumberland	32,361		1	0	0	0	0		1
Frederick	11,301		1	0	0	0	0		1
District of Columbia:									
Washington	[1] 437,571	48	20	26	2	3	21		13
Virginia:									
Lynchburg	30,277	10	1	2	0	0	2	34	0
Norfolk	159,089	10	4	0	0	0	0	148	6
Richmond	181,044	4	8	2	0	1	1	0	7
Roanoke	55,502	11	2	5	0	0	0	0	0
West Virginia:									
Charleston	45,597	5	1	2	0	0	4	1	0
Huntington	57,918	0	2	1	0		0	0	
Wheeling	[1] 56,208	14	2	1	0	1	8	0	3
North Carolina:									
Raleigh	29,171	16	1	0	0	2	0	0	2
Wilmington	35,719	2	1	0	0	0	0	6	5
Winston-Salem	56,230	8	1	1	0	0	0	1	6
South Carolina:									
Charleston	71,245	0	2	1	0	1	0	0	1
Columbia	39,688	2	1	0	0	0	0	4	0
Greenville	25,789	0	0	2	0	0	0	0	0
Georgia:									
Atlanta	222,963	9	4	2	2	1	0	0	10
Brunswick	15,937	1	0	1	0	0	0	0	0
Savannah	89,448	2	1	0	0	1	0	2	2
Florida:									
St. Petersburg	24,403	0	0	1	0	0	0	0	0
Tampa	56,050	3	1	2	0	0	1	4	0
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	5	1	0	0	0	0	0	2
Lexington	43,673	5	1	0	0	0	0	1	2
Louisville	257,671	11	9	3	3	1	1	0	13
Tennessee:									
Memphis	170,067	20	8	2	0	0	1	10	11
Nashville	121,128	1	3	1	0	2	3	0	7
Alabama:									
Birmingham	195,901	32	3	11	7	2	0	0	12
Mobile	63,858	0	1	0	0	3	0	0	6
Montgomery	45,383	1	1	4	1	0	0	2	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	4	2	1	0		0	0	
Little Rock	70,916	1	2	0	10	0	0	0	0
Louisiana:									
New Orleans	404,575	2	15	8	5	5	1	0	16
Shreveport	54,590	1		1	0	0	0	0	5
Oklahoma:									
Oklahoma	101,150	1	2	1	6	1	0	0	4
Tulsa	102,018	6	2	3	0		2		
Texas:									
Dallas	177,274	32	8	9	1	1	0	0	6
Galveston	46,877	0	2	3	3	0	0	0	4
Houston	154,970		3	9	0	1	0		9
San Antonio	184,727	0	1	0	11	1	0	0	11
MOUNTAIN									
Montana:									
Billings	16,927	16	1	0	0	0	0	3	0
Great Falls	27,787	1	1	9	0	0	8	4	0
Helena	[1] 12,037	0	0	0	0	0	0	0	1
Missoula	[1] 12,668		0	4	0	0	1		1

[1] Population Jan. 1, 1920.

City reports for week ended January 10, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
MOUNTAIN—con.									
Idaho:									
Boise	22,806	0	0	0	0	0	0	0	0
Colorado:									
Denver	272,031	16	10	6	0	1	3	60	15
Pueblo	43,519	32	4	1	0	1	0	3	3
New Mexico:									
Albuquerque	16,648	13	1	0	0	0	0	0	2
Arizona:									
Phoenix	33,899	0	-------	0	0	2	0	1	1
Utah:									
Salt Lake City	126,241	75	3	5	0	0	2	35	4
Nevada:									
Reno	12,429	2	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	58	6	8	0	-------	6	15	-------
Spokane	104,573	23	3	0	0	-------	39	0	-------
Tacoma	101,731	4	3	1	0	0	0	0	3
Oregon:									
Portland	273,621	23	8	12	0	0	3	7	14
California:									
Los Angeles	666,853	74	37	38	8	2	20	24	23
Sacramento	69,950	3	2	1	0	0	1	0	1
San Francisco	539,038	35	27	19	8	3	1	6	18

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	1	7	0	0	0	0	0	2	0	0	14
New Hampshire:											
Concord	1	1	0	0	0	0	0	0	0	0	10
Vermont:											
Barre	1	0	0	0	0	0	0	0	0	0	4
Burlington	2	2	1	0	0	0	0	0	0	2	19
Massachusetts:											
Boston	48	117	0	0	0	16	1	1	0	20	255
Fall River	3	1	0	0	0	2	0	0	0	1	31
Springfield	7	42	0	0	0	2	0	0	0	8	43
Worcester	11	20	0	0	0	2	0	0	0	0	43
Rhode Island:											
Pawtucket	1	2	0	0	0	0	0	0	0	0	16
Providence	9	9	0	0	0	3	0	1	1	4	59
Connecticut:											
Bridgeport	5	18	0	0	0	2	0	1	0	1	36
Hartford	7	8	0	0	0	0	0	0	0	3	46
New Haven	7	41	0	0	0	1	0	1	0	16	43
MIDDLE ATLANTIC											
New York:											
Buffalo	22	24	0	0	0	14	1	5	1	6	155
New York	155	256	0	0	0	[1] 96	12	66	18	107	1 660
Rochester	12	42	0	0	0	5	0	3	0	8	70
Syracuse	14	2	0	0	0	1	0	0	0	3	44

[1] Population Jan. 1, 1920.

City reports for week ended January 10, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
MIDDLE ATLANTIC—continued											
New Jersey:											
Camden	2	9	0	2	1	2	0	0	0	7	38
Newark	19	37	0	0	0	11	0	0	1	77	139
Trenton	2	4	0	0	0	3	0	0	0	3	59
Pennsylvania:											
Philadelphia	54	194	0	3	1	47	3	18	2	102	620
Pittsburgh	26	70	1	0	0	11	2	5	1	7	165
Reading	1	3	0	0	0	2	0	0	0	14	29
Scranton	4	2	0	0	0	1	0	1	1	11	------
EAST NORTH CENTRAL											
Ohio:											
Cincinnati											
Cleveland	11	25	1	3	0	1	0	6	1	3	134
Columbus	37	30	2	0	0	15	2	2	0	23	187
Toledo	8	12	1	5	0	3	0	2	0	3	83
Indiana:	16	19	3	1	0	2	0	0	0	39	74
Fort Wayne											
Indianapolis	3	------	0	------	------	------	0	------	------	------	------
South Bend	10	4	2	12	0	6	0	0	0	3	108
Terre Haute	4	4	0	0	0	1	0	0	0	0	12
Illinois:	2	1	0	6	0	0	0	0	0	0	16
Chicago											
Cicero	112	276	2	0	0	51	3	13	0	176	822
Peoria	1	10	0	0	0	0	0	0	0	3	7
Springfield	6	11	0	0	0	0	0	0	0	0	13
Michigan:	2	4	0	0	0	0	0	0	0	0	21
Detroit											
Flint	82	87	3	7	0	18	2	6	0	47	260
Grand Rapids	8	8	1	3	0	1	0	1	0	11	17
Wisconsin:	7	12	1	2	0	4	1	0	0	3	37
Madison											
Milwaukee	3	4	0	2	0	2	0	0	0	0	5
Racine	37	26	2	7	0	2	0	1	0	37	110
Superior	5	3	0	6	0	1	0	0	0	6	17
	2	4	2	0	0	1	0	0	0	0	12
WEST NORTH CENTRAL											
Minnesota:											
Duluth	6	17	1	0	0	0	0	0		2	25
Minneapolis	32	74	10	60	18	2	0	1	0	5	103
St. Paul	17	31	12	5	2	5	1	0	0	18	51
Iowa:									0		
Davenport	2	1	1	2	------	------	0	1	------	1	------
Des Moines	8	13	2	6	------	------	0	0	------	0	------
Sioux City	3	1	1	0	------	------	0	0	------	0	------
Waterloo	4	1	0	8	------	------	0	0	------	2	------
Missouri:											
Kansas City	13	75	2	0	0	9	1	0	0	0	93
St. Joseph	3	3	1	0	0	1	0	0	0	0	25
St. Louis	30	146	1	10	0	16	2	2	0	1	287
North Dakota:											
Fargo	1	3	1	0	0	0	0	0	0	0	5
Grand Forks	1	0	1	0	------	------	0	0	------	0	------
South Dakota:											
Aberdeen	------	0	------	0	------	------	------	0	------	1	------
Sioux Falls	2	3	1	0	0	0	0	0	0	0	10
Nebraska:											
Lincoln	2	2	1	0	0	0	0	0	0	2	15
Omaha	5	4	2	23	0	1	0	0	0	0	34
Kansas:											
Topeka	2	5	0	0	0	0	0	0	0	3	15
Wichita	3	3	0	0	0	1	0	0	0	9	31

City reports for week ended January 10, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	6	0	0	0	0	0	0	0	1	36
Maryland:											
Baltimore	30	37	0	0	0	20	2	3	2	47	305
Cumberland	1	0	0	0	0	0	0	0	0		8
Frederick	0	1	0	0	0	0	0	0	0		2
District of Columbia:											
Washington	19	14	0	1	0	6	2	15	3	17	127
Virginia:											
Lynchburg	1	0	0	0	0	0	0	0	0	0	12
Norfolk	1	0	0	0	0	2	0	0	0	12	
Richmond	5	2	0	0	0	2	1	0	0	1	53
Roanoke	1	4	0	0	0	1	0	1	0	0	17
West Virginia.											
Charleston	1	4	0	7	0	0	0	0	0	0	17
Huntington	1	3	0	1			0	0		0	
Wheeling	1	2	0	0	0	0	0	0	0	0	27
North Carolina:											
Raleigh	1	2	0	2	0	0	0	0	0	1	14
Wilmington	1	0	0	3	0	0	0	1	0	0	19
Winston-Salem	2	1	1	0	0	0	0	0	0	0	22
South Carolina:											
Charleston	0	1	0	0	0	1	1	1	0	0	23
Columbia	0	0	1	0	0	2	0	0	0	0	20
Greenville	0	0	0	0	0	1	0	1	0	0	6
Georgia:											
Atlanta	4	3	2	2	0	7	0	0	0	3	76
Brunswick	0	0	0	0	0	0	0	0	0	0	8
Savannah	1	0	0	0	0	2	0	1	0	0	37
Florida:											
St. Petersburg	0	2	0	0	0	0	0	0	0	0	11
Tampa	1	0	0	0	0	2	0	4	0	0	30
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	3	0	0	0	0	0	0	0	0	27
Lexington	1	1	0	1	0	0	0	0	0	0	14
Louisville	5	19	0	2	0	4	1	1	0	9	75
Tennessee:											
Memphis	3	6	1	4	0	4	1	6	1	0	68
Nashville	2	0	0	0	0	8	1	0	0	0	45
Alabama:											
Birmingham	4	10	1	58	0	6	1	1	0	0	82
Mobile	0	1	0	1	0	0	0	1	0	0	27
Montgomery	0	1	0	4	0	0	0	0	0	0	18
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	5	0	0			0	0		0	
Little Rock	2	0	0	0	0	0	0	2	1	0	
Louisiana:											
New Orleans	4	16	3	0	0	11	2	10	1	0	144
Shreveport		0		7	1	1		0	0	0	29
Oklahoma:											
Oklahoma	3	1	2	0	0	2	0	0	0	0	28
Tulsa	2	1	1	0			0	1			
Texas:											
Dallas	3	6	1	5	0	2	0	1	0	2	41
Galveston	1	0	0	0	0	2	0	0	0	0	17
Houston	1	3	0	2	0	6	0	0	0		59
San Antonio	0	2	0	0	0	6	0	2	0		61

City reports for week ended January 10, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
MOUNTAIN											
Montana:											
Billings	1	12	1	0	0	0	0	0	0	14	1
Great Falls	1	5	1	0	0	0	0	0	0	0	4
Helena	1	0	0	0	0	0	0	0	0	0	7
Missoula	1	0	0	0	0	0	0	0	0	0	9
Idaho:											
Boise	2	10	0	2	0	0	1	0	0	0	3
Colorado:											
Denver	9	7	3	0	0	12	0	0	0	2	81
Pueblo	3	2	0	0	0	0	0	1	0	0	15
New Mexico:											
Albuquerque	1	0	0	0	0	7	0	0	0	0	10
Arizona:											
Phoenix	------	0	------	0	0	7	------	0	0	0	23
Utah:											
Salt Lake City	4	3	2	0	0	3	0	0	0	1	34
Nevada:											
Reno	1	1	0	1	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle	9	11	1	12	------	------	1	3	------	4	------
Spokane	4	3	5	2	------	------	1	0	------	6	------
Tacoma	3	2	1	1	0	0	0	0	0	0	40
Oregon:											
Portland	6	6	6	17	0	0	1	1	0	7	------
California:											
Los Angeles	15	39	2	29	0	26	1	2	0	34	263
Sacramento	1	1	0	2	0	4	1	0	0	0	18
San Francisco	15	9	1	5	1	15	1	4	0	16	184

Division, State, and city	Cerebrospinal meningitis: Cases	Cerebrospinal meningitis: Deaths	Dengue: Cases	Dengue: Deaths	Lethargic encephalitis: Cases	Lethargic encephalitis: Deaths	Pellagra: Cases	Pellagra: Deaths	Poliomyelitis (infantile paralysis): Cases, est. expectancy	Poliomyelitis (infantile paralysis): Cases	Poliomyelitis (infantile paralysis): Deaths	Typhus fever: Cases	Typhus fever: Deaths
NEW ENGLAND													
Massachusetts:													
Boston	2	2	0	0	4	3	0	0	0	0	0	0	0
Worcester	0	0	0	0	1	0	0	0	0	1	0	0	0
Connecticut:													
Bridgeport	1	1	0	0	0	0	0	0	0	0	0	0	0
Hartford	0	0	0	0	0	0	0	0	0	1	1	0	0
New Haven	1	0	0	0	0	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC													
New York:													
Buffalo	0	0	0	0	1	1	0	0	0	0	0	0	0
New York	3	1	0	0	7	5	0	0	0	0	0	1	0
Rochester	0	0	0	0	0	0	0	0	0	1	0	0	0
Pennsylvania:													
Philadelphia	1	1	0	0	3	3	0	0	0	1	0	0	0
Scranton	1	1	0	0	0	0	0	0	0	0	0	0	0

City reports for week ended January 10, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Dengue		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, est. expectancy	Cases	Deaths	Cases	Deaths
E. NORTH CENTRAL													
Ohio:													
Cincinnati	0	0	0	0	0	1	0	0	0	0	0	0	0
Cleveland	0	0	0	0	1	1	0	0	0	0	0	0	0
Illinois:													
Chicago	3	1	0	0	2	0	0	0	0	0	0	0	0
Michigan:													
Detroit	1	0	0	0	3	2	0	0	0	0	0	0	0
Wisconsin:													
Milwaukee	0	0	0	0	1	1	0	0	0	0	0	0	0
W. NORTH CENTRAL													
Missouri:													
St. Louis	1	1	2	0	2	0	0	0	0	0	0	0	0
Nebraska:													
Omaha	0	0	0	0	1	1	0	0	0	0	0	0	0
Kansas:													
Wichita	0	1	0	0	0	0	0	0	0	0	0	0	0
SOUTH ATLANTIC													
Maryland:													
Baltimore	0	0	0	0	1	1	0	0	0	0	2	0	0
South Carolina:													
Charleston	1	1	0	0	0	0	0	1	0	0	0	0	0
Columbia	0	0	0	0	0	0	0	2	0	0	0	0	0
Georgia:													
Atlanta	0	0	0	0	0	2	0	0	0	0	0	0	0
Savannah	0	0	0	0	0	0	1	1	0	0	0	0	0
E. SOUTH CENTRAL													
Tennessee:													
Memphis	0	0	0	0	0	0	0	1	0	0	0	0	0
W. SOUTH CENTRAL													
Louisiana:													
Shreveport	0	1	0	0	0	0	0	0	0	0	0	0	0
Oklahoma:													
Oklahoma	0	0	0	0	0	1	0	0	0	0	0	0	0
Texas:													
Houston	0	0	0	0	0	1	0	0	0	0	0	0	0
San Antonio	0	1	0	0	0	0	0	0	0	0	0	0	0
MOUNTAIN													
Montana:													
Missoula	0	0	0	0	0	0	0	0	0	0	0	1	0
Colorado:													
Denver	0	0	0	0	0	1	0	0	0	0	0	0	0
Utah:													
Salt Lake City	0	1	0	0	0	0	0	0	0	0	0	0	0
Nevada:													
Reno	0	0	0	0	0	0	0	0	0	2	1	0	0
PACIFIC													
Washington:													
Tacoma	0	0	0	0	0	0	0	0	0	1	1	0	0
Oregon:													
Portland	0	0	0	0	4	0	0	0	0	0	0	0	0
California:													
Los Angeles	2	1	0	0	1	0	1	0	0	2	0	0	0
Sacramento	0	0	0	0	0	0	0	0	0	1	0	0	0
San Francisco	0	1	0	0	0	0	0	0	0	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended January 10, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, November 2, 1924, to January 10, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10
Total	204	201	201	175	[2] 190	[3] 193	[4] 197	150	[4] 155	[5] 169
New England	194	204	209	166	258	[3] 208	221	180	258	256
Middle Atlantic	154	158	159	144	170	175	187	149	140	181
East North Central	207	183	168	173	165	167	185	134	151	[5] 130
West North Central	265	305	332	307	309	265	299	168	176	143
South Atlantic	301	221	262	260	[6] 173	201	150	134	146	173
East South Central	200	149	183	120	[7] 98	97	149	51	91	120
West South Central	213	274	209	125	144	200	195	116	148	144
Mountain	363	344	258	162	172	315	248	209	191	239
Pacific	209	273	281	128	252	273	[4] 207	226	[4] 129	194

MEASLES CASE RATES

	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10
Total	56	58	72	66	[2] 112	[3] 128	[4] 143	105	[4] 158	[5] 216
New England	89	102	122	147	164	[3] 282	194	278	380	395
Middle Atlantic	73	68	78	79	105	120	115	235	121	169
East North Central	67	76	97	85	199	207	317	138	294	[5] 422
West North Central	15	21	29	10	25	35	19	10	10	19
South Atlantic	26	8	22	14	[6] 22	30	24	35	53	83
East South Central	11	11	11	0	[7] 0	6	11	0	17	29
West South Central	5	5	5	9	0	0	19	14	9	5
Mountain	19	38	38	29	19	48	57	19	115	134
Pacific	41	67	90	52	136	125	[4] 37	70	[4] 83	104

SCARLET FEVER CASE RATES

	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10
Total	208	198	223	232	[2] 270	[3] 312	[4] 314	244	[4] 297	[5] 369
New England	283	335	385	437	544	[3] 602	552	512	609	661
Middle Atlantic	179	167	185	197	197	260	268	225	286	324
East North Central	200	194	225	228	257	234	311	230	243	[5] 383
West North Central	466	456	473	508	616	626	601	468	527	757
South Atlantic	136	118	146	128	[6] 171	252	213	132	203	160
East South Central	166	80	97	57	[7] 162	109	240	126	172	229
West South Central	116	83	65	93	125	162	185	65	83	148
Mountain	181	191	229	143	296	162	239	191	162	382
Pacific	145	116	174	168	197	218	[4] 134	133	[4] 138	189

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Norfolk, Va., and Memphis, Tenn., not included in calculating the rate. Reports not received at time of going to press.
[3] Worcester, Mass., not included.
[4] Los Angeles, Calif., not included.
[5] Fort Wayne, Ind., not included.
[6] Norfolk, Va., not included.
[7] Memphis, Tenn., not included.

***Summary of weekly reports from cities November 2, 1924, to January 10, 1925—Annual rates per 100,000 population*—Continued**

SMALLPOX CASE RATES

	Week ended—									
	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan 10.
Total	25	35	34	38	[2] 58	[3] 43	[4] 42	41	[4] 40	[5] 57
New England	0	0	0	0	0	[3] 0	0	0	0	0
Middle Atlantic	2	0	3	5	5	1	2	2	3	3
East North Central	4	8	10	14	10	13	14	20	27	[5] 40
West North Central	170	207	176	236	417	255	209	205	129	220
South Atlantic	6	14	12	6	[6] 48	39	22	28	39	30
East South Central	46	69	120	74	[7] 204	177	314	183	372	395
West South Central	9	37	28	32	19	14	51	19	32	65
Mountain	10	67	19	10	19	19	29	48	48	29
Pacific	93	136	142	136	113	113	[4] 106	122	[4] 69	148

TYPHOID FEVER CASE RATES

	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan 10.
Total	22	19	24	29	[2] 45	[3] 43	[4] 56	35	[4] 37	[5] 36
New England	17	12	12	22	30	[3] 16	30	17	25	15
Middle Atlantic	12	17	23	46	71	68	101	57	58	49
East North Central	10	8	11	7	22	32	33	24	28	[5] 23
West North Central	19	6	17	4	8	17	15	19	4	6
South Atlantic	43	20	28	30	[6] 56	35	30	37	41	55
East South Central	80	114	80	109	[7] 63	57	51	34	40	51
West South Central	83	51	60	37	60	51	56	28	37	70
Mountain	86	76	19	19	10	19	10	0	0	10
Pacific	26	17	46	17	29	17	[4] 14	15	[4] 5	26

INFLUENZA DEATH RATES

	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan 10.
Total	7	8	8	10	[2] 12	[3] 17	[4] 16	15	19	[5] 21
New England	12	0	5	5	17	[3] 5	15	15	3	17
Middle Atlantic	12	9	9	8	11	22	17	14	21	20
East North Central	3	3	5	11	9	13	9	16	10	[5] 16
West North Central	0	0	0	7	4	4	9	7	9	13
South Atlantic	6	8	12	14	[6] 11	22	22	14	26	35
East South Central	6	23	11	29	[7] 28	23	23	51	63	46
West South Central	5	36	15	25	31	36	41	15	51	41
Mountain	0	10	38	19	29	29	48	10	38	19
Pacific	0	20	0	8	8	4	[4] 17	12	12	20

PNEUMONIA DEATH RATES

	Nov. 8	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan 10.
Total	118	125	120	130	[2] 153	[3] 159	[4] 172	157	203	[5] 192
New England	82	87	94	144	127	[3] 109	134	114	174	122
Middle Atlantic	154	149	152	152	188	201	191	178	226	228
East North Central	81	86	90	93	115	125	146	126	165	[5] 152
West North Central	63	70	79	74	63	88	68	92	101	90
South Atlantic	152	169	116	169	[6] 191	175	248	205	250	246
East South Central	137	263	206	246	[7] 211	217	297	206	303	292
West South Central	112	173	102	107	163	178	163	229	341	260
Mountain	76	95	143	124	210	200	276	219	229	229
Pacific	127	106	86	94	168	135	[4] 86	147	188	184

[2] Norfolk, Va., and Memphis, Tenn., not included in calculating the rate. Reports not received at time of going to press.
[3] Worcester, Mass., not included
[4] Los Angeles, Calif., not included.
[5] Fort Wayne, Ind., not included.
[6] Norfolk, Va., not included.
[7] Memphis, Tenn., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

AZORES

Plague.—Plague has been reported in the Azores as follows: Castelo Branco, a village 11½ kilometers from Horta, November 25, 1924, several cases; Feteira, 5 kilometers from Horta, November 25, one case; St. Michael, during the week ended November 22, 1924, three cases with one death. During the 10 days ended December 29, 1924, eight cases were reported on St. Michael Island.

BRAZIL

Hospital for lepers—Ceara.—On November 29, 1924, the president of the State of Ceara, Brazil, approved the bill passed in July, 1924, providing for the construction of a hospital for lepers at Ceara, Brazil.

CANARY ISLANDS

Plague—Vicinity of Santa Cruz de Teneriffe.—Information dated December 26, 1924, shows the occurrence, reported December 19, 1924, of three cases of plague at Realejo Alto, 45 kilometers from Santa Cruz de Teneriffe, Canary Islands. One case terminated fatally.

HAWAII

Plague—Honokaa.—A case of plague was notified, November 4, 1924, at Honokaa, Hawaii. The case occurred at Mill Camp, a location of the Honokaa Sugar Co.

MALTA

Lethargic encephalitis—Malta fever—Typhoid fever.—During the month of November, 1924, 5 cases of lethargic encephalitis, 56 cases of Malta (undulant) fever, and 26 cases of typhoid fever with 1 death were reported in the island of Malta.

SPAIN

Mortality from certain diseases—Barcelona Province.—During the months of September and October, 1924, mortality from certain diseases was reported in the Province of Barcelona, Spain, as follows: September, 1924—Bright's disease, 60 deaths; cancer and other malignant tumors, 113; organic diseases of the heart, 158; pneumonia,

26; tuberculosis, all forms, 172; typhoid fever, 101 deaths. October, 1924—Bright's disease, 71 deaths; cancer and other malignant tumors, 128; organic diseases of the heart, 198; pneumonia, 37; smallpox, 1; tuberculosis, all forms, 183; typhoid fever, 95 deaths.

UNION OF SOUTH AFRICA

Plague—Cape Province—Orange Free State—Transvaal.—During the week ended November 29, 1924, plague was reported in the Union of South Africa as follows: Cape Province—1 case, native, at De Aar; 2 cases, fatal, in native children, on farm, Maraisburg district. Orange Free State—1 case, native, from Hoopstad district, received at Kroonstad municipality. Transvaal—1 case, native, fatal, Wolmaransstad district, Vaal River.

VIRGIN ISLANDS

Communicable diseases—December, 1924.—Communicable diseases have been notified in the Virgin Islands as follows:

Island and disease	Cases	Remarks
St. Thomas and St. John.		
Dysentery	2	Unclassified.
Gonorrhea	2	
Malaria	1	St John.
Measles	1	
St Croix:		
Filariasis	7	
Gonorrhea	1	
Syphilis	1	Imported.
Trachoma	1	
Tuberculosis	2	Chronic pulmonary.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER

Reports Received During Week Ended January 30, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Nov. 16-22, 1924. Cases, 1,938; deaths, 1,195.
Calcutta	Nov. 30-Dec. 13	14	12	
Madras	Dec. 7-13	2	2	
Siam:				
Bangkok	Nov. 23-29	1		

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1	1	
St. Michael Island	Nov. 16-Dec. 29	11		
Canary Islands.				
Realejo Alto	Dec. 26	3	1	Vicinity of Santa Cruz de Teneriffe.
Ceylon:				
Colombo	Dec. 7-13		1	
Hawaii:				
Honokaa	Nov. 4	1		At Mill Camp, location of Honokaa Sugar Co.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received During Week Ended January 30, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
India				Nov. 16-22, 1924: Cases, 1,712; deaths, 1,237.
Rangoon	Nov. 30-Dec. 6	1	2	
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri; epidemic.
Pare	Nov. 29			Do.
Soerabaya	Nov. 16-22	6	4	
Union of South Africa:				
Cape Province—				
De Aar	Nov. 22-29	1		Native.
Maraisburg District	do	2	2	Bubonic. Native children, on Goedshoop Farm.
Orange Free State—				
Kroonstad	do	1		Bubonic; mild; from Grandstable Farm, Hoopstad district.
Transvaal—				
Wolmaransstad District.	do	1	1	On Farm Wolvespruit, Vaal River. Native.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Brazil:				
Pernambuco	Nov. 9-15	5	2	
Canada:				
British Columbia—				
Vancouver	Jan. 4-10	19		
Manitoba—				
Winnipeg	Jan 4-17	11		
China:				
Amoy	Dec. 7-13			Present.
Hongkong	Nov 30-Dec. 6	4	1	
Shanghai	Dec 21-27		1	
Egypt:				
Alexandria	Dec. 17-23	3		
Great Britain:				
England and Wales	Dec. 7-Jan 3	288		
India				Nov 16-22, 1924; Cases, 969; deaths, 210.
Calcutta	Nov. 30-Dec. 13	78	36	
Karachi	Dec. 14-20	3		
Madras	Dec 7-13	17	4	
Rangoon	Nov 30-Dec. 6	9	3	
Java:				
East Java—				
Pasoeroean Residency	Nov. 12-19			Epidemic in two native villages.
Soerabaya	Nov. 16-29	123	51	
Mexico:				
Guadalajara	Jan. 6-12		1	
Mexico City	Dec 14-20	2		
Vera Cruz	Jan. 5-11		3	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Spain:				
Barcelona	Oct. 1-31	1		Province.
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan. 3		97	
Switzerland:				
Lucerne	Nov. 1-30	9		
Syria:				
Aleppo	Dec 21-27	12		
Turkey:				
Constantinople	Dec. 13-19	5		
Union of South Africa:				
Cape Province	Nov. 22-29			Outbreaks.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received During Week Ended January 30, 1925—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Mexico:				
Mexico City	Dec. 14-20	14		
Poland				Oct. 12-18, 1924: Cases, 30; deaths, 1.
Spain:				
Madrid	Year 1924		3	
Turkey:				
Constantinople	Dec. 13-19	3		
Union of South Africa:				
Cape Province	Nov. 23-29			Outbreaks.
Orange Free State	do			Do.

Reports Received from December 27, 1924, to January 23, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo	Nov. 16-22	1		
India				Oct 19-Nov. 15, 1924: Cases, 10,283; deaths, 6,122.
Bombay	Nov. 23-29	1	1	
Calcutta	Oct 26-Nov. 29	35	29	
Madras	Nov. 16-Dec. 6	41	26	
Rangoon	Nov. 9-29	5	2	
Indo-China				Aug. 1-31, 1924: Cases, 7; deaths, 6. August, 1923: Cases, 13; deaths, 10 native and 1 fatal case European.
Province -				
Anam	Aug. 1-31	1	1	
Cambodia	do	2	2	
Cochin-China	do	4	3	
Siam:				
Bangkok	Nov. 9-22	3	2	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Ponta Delgada	Dec. 6-12	9	5	
British East Africa				
Kenya—				
Uganda	Aug. 1-31	79	62	
Canary Islands:				
Las Palmas				Stated to have been infected with plague Sept. 30, 1924.
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-Dec. 6	7	6	
China				
Nanking	Nov. 23-Dec. 6			Present.
Ecuador.				
Guayaquil	Nov. 16-Dec 15	8	3	Rats taken, 17,677; found infected, 33.
Egypt				Jan. 1-Dec. 9, 1924: Cases, 365. Corresponding period, year 1923—cases, 1,462.
City -				
Alexandria	Dec 3-9	1	1	Bubonic.
Port Said	do	2	1	
Suez	do	1	1	
Hawaii				Dec. 9, 1924: Plague-infected rodent found in vicinity of Honokaa village.
India				Oct. 19-Nov. 15, 1924: Cases, 10,091; deaths, 7,463.
Bombay	Nov. 22-29	1	1	
Karachi	Nov. 30-Dec. 6	2	1	
Madras (Presidency)	Nov. 23-Dec 6	182	128	
Rangoon	Oct 26-Nov 29	12	11	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to January 23, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China				Aug. 1-31, 1924: Cases, 13; deaths, 8. Corresponding period, 1923: Cases, 23; deaths, 21.
Province—				
Anam	Aug. 1-31	2	2	
Cambodia	do	9	6	
Cochin-China	do	2		
Java:				
Cheribon district	Oct. 14-Nov. 3		14	
Pekalongan district	do		29	
Soerabaya district—				
Soerabaya	Nov. 4			Epidemic. Seaport.
Tegal	Oct. 14-20		3	
Madagascar				Oct. 16-Nov. 15, 1924: Cases, 83; deaths, 75.
Tananarive Province—				
Tananarive Town	Oct. 16-Nov. 15	6	5	
Other localities	do	77	70	Bubonic, pneumonic, septicemic
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
On vessel:				
S. S. Conde				At Marseille, France, Nov. 6, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Bolivia:				
La Paz	Nov. 1-30	12	7	
Brazil:				
Pernambuco	Nov. 16-22	21	4	
British South Africa				
Northern Rhodesia	Oct. 28-Nov. 24	43	2	In natives.
Canada:				
British Columbia—				
Vancouver	Dec. 14-Jan. 3	32		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33.
China:				
Amoy	Nov. 9-29			Present.
Antung	Nov. 17-22	1		
Foochow	Nov. 2-Dec. 13			Do.
Hongkong	Nov. 9-15	1		
Shanghai	Dec. 7-13	1	1	Case, foreign; death, Chinese.
Czechoslovakia				April-June, 1924. Case, 1, occurring in Province of Moravia.
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 16	6		
Gibraltar	Dec. 8-14	1		
Great Britain:				
England and Wales	Nov. 23-Dec. 6	184		
Newcastle-on-Tyne	Dec. 14-20	1		
India				Oct. 19-Nov. 15, 1924: Cases, 3,057; deaths, 673.
Bombay	Nov. 2-29	8	6	
Calcutta	Oct. 26-Nov. 29	72	46	
Karachi	Nov. 16-Dec. 13	9	1	
Madras	Nov. 16-Dec. 6	32	16	
Rangoon	Oct. 26-Nov. 29	32	9	
Indo-China				Aug. 1-31, 1924: Cases, 145; deaths, 54.
Province—				
Anam	Aug. 1-31	41	9	August, 1923: Cases, 177 (European, 20); deaths, 31 (European, 1).
Cambodia	do	24	8	
Cochin-China	do	72	30	
Saigon	Nov. 16-22	1	1	Including 100 sq. km. of surrounding country.
Tonkin	Aug. 1-31	8	7	
Iraq:				
Bagdad	Nov. 9-15	1	1	
Jamaica				Nov. 30-Dec. 27, 1924: Cases, 33. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to January 23, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Java:				
East Java—				
Soerabaya	Oct. 19-Nov. 15	361	108	
Province—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov. 14	2		
Cheribon	Oct. 14-Nov. 3	14		
Pasoeroean	Oct. 26-Nov. 1	9	1	
Pekalongan	Oct. 14-Nov. 3	20		
Latvia				Oct. 1-31, 1924: Cases, 3.
Mexico:				
Durango	Dec. 1-31		5	
Guadalajara	Dec. 2-29		1	
Mexico City	Nov. 23-Dec. 13	2		
Tampico	Dec. 11-31	5	4	
Vera Cruz	Dec. 1-Jan. 3		10	
Portugal:				
Lisbon	Dec. 7-20	19		
Oporto	Nov. 30-Dec. 27	3	2	
Russia				Jan 1-June 30, 1924. Cases, 9,683.
Spain:				
Barcelona	Nov. 27-Dec 10		4	
Cadiz	Nov. 1-30		34	
Valencia	Nov. 30-Dec. 6	2	0	
Syria:				
Aleppo	Nov. 23-29	1	0	
Tunis:				
Tunis	Nov. 25-Dec. 29	42	35	
Union of South Africa:				
Cape Province	Nov. 9-15			Outbreaks.
Orange Free State	Nov. 2-8			Do.
Transvaal	Nov. 9-15			Do.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Nov 1-Dec. 10	2		
Bolivia:				
La Paz	do	2		
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Iquique	Nov. 30-Dec. 6		2	
Talcahuano	Nov. 16-Dec. 20		5	
Valparaiso	Nov. 25-Dec. 7		4	
Czechoslovakia				Apr.-June, 1924: Cases 3, occurring in Province of Russinia.
Egypt:				
Alexandria	Dec. 3-9	1	1	
Cairo	Oct. 1-Nov. 11	9	7	
Latvia				Oct. 1-31, 1924: Cases, 5.
Mexico:				
Durango	Dec. 1-31		1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Dec. 13	51		
Palestine				Nov. 12-Dec. 8, 1924: Cases, 7.
Poland				Sept. 28-Oct. 11, 1924: Cases, 50, deaths, 3.
Rumania:				
Constanza	Dec. 1-10	1		
Russia				Jan. 1-June 30, 1924: Cases, 92,000.
Spain:				
Malaga	Dec. 21-27		1	
Turkey:				
Constantinople	Nov. 15-Dec. 5	3	1	
Union of South Africa:				
Cape Province	Nov. 9-15			Outbreaks.
East London	Nov. 16-22	1		
Orange Free State	Nov. 9-15			Do.
Transvaal	do			Do.
Yugoslavia:				
Belgrade	Nov. 24-Dec. 7	4		

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UNITED STATES PUBLIC HEALTH SERVICE.

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

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PUBLIC HEALTH REPORTS

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MILD TYPHUS (BRILL'S DISEASE) IN THE LOWER RIO GRANDE VALLEY

By CHARLES G. SINCLAIR, Major, Medical Corps, U. S. Army, and KENNETH F. MAXCY, Assistant Surgeon, United States Public Health Service

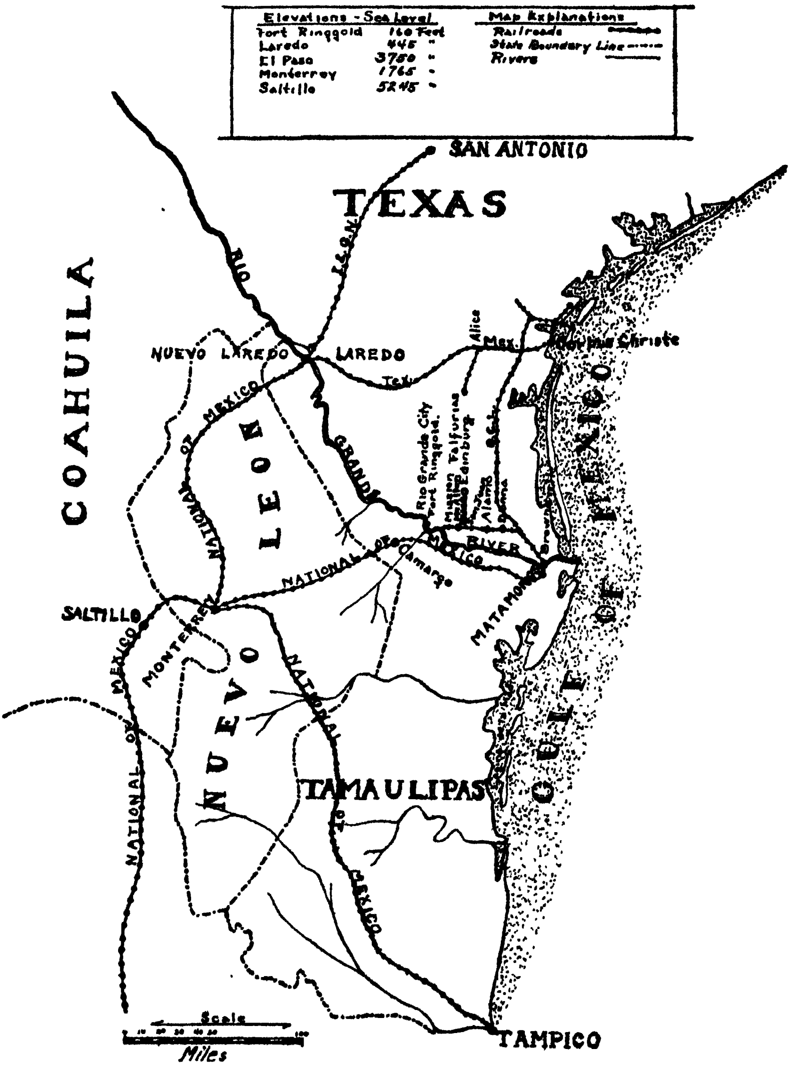
"Tabardillo" is known to have existed in the highlands of Mexico since the great epidemic of 1576–77, which, according to the writings of Padre Sabagun, carried off some 2,000,000 Indians. Many writers have remarked upon the singular limitation of the disease to the Mexican plateau, i. e., to altitudes above 1,500 to 1,800 feet and a tendency to prevalence in winter months. Occasional cases were noted in the lowlands along the coast, in the Rio Grande Valley, and along the Texas border, but these patients were practically always recent arrivals from the interior; the cases were sporadic and did not give rise to secondary cases.

The brilliant researches of a few years ago of Nicolle and his collaborators in Tunis, and of Ricketts, Wilder, Anderson, and Goldberger, in this country, did much to explain this distribution; "tabardillo" was shown to be identical with European typhus; the body louse was incriminated as the insect vector; and it was shown that while the body louse is common on Mexican peoples in the highlands, particularly during the winter months, it is almost unknown among the peoples living in the low country, among whom, however, head lice are commonly prevalent.

It is peculiarly interesting, therefore, to report the occurrence of what appeared to be mild typhus fever in the lowlands along the Rio Grande Valley, occurring during the summer of 1924. Moreover, evidence was obtained to indicate that indigenous cases of similar type are not uncommon in this valley.

This outbreak centered around Rio Grande City, Tex., a town of about 2,500 population (of which 90 per cent are Mexican), located about 100 miles from the Gulf and at an elevation of 160 feet. Adjoining this town is Fort Ringgold, a Cavalry garrison of about 200 men, and a quarantine, immigration, and customs station guarding one of the legal ports of entry from Mexico, through which pass about 300 immigrants and several hundred local travelers annually. There is free intercourse with the small town of Camargo on the Mexican side of the river. Monterey, Mexico, a city of 85,000, is 120 miles distant, with direct rail communication.

During May and June, 1924, Dr. G. W. Edgerton, of Rio Grande City, and Maj. Fletcher Gardner, at Fort Ringgold, began to note cases of fever of about 14 days' duration, with eruption, and they suspected that they were dealing with a typhus infection.



Map showing localities of occurrence of mild typhus in the lower Rio Grande Valley

Investigation was begun by the Army and Public Health authorities in July, and, up to August 1, notes and clinical observations had been collected on 11 cases at Rio Grande City and 5 at Fort Ringgold. When this investigation was then extended to neighboring communities, through the assistance of local health officials and physicians, additional cases were demonstrated at Laredo, 110

miles north, and at Edinburg, Alamo, and Donna, 50 to 60 miles south. Fourteen of the 20 cases here reported were Mexicans, 5 were Americans living at Fort Ringgold, and 1 was an American living at Edinburg. These cases are summarized in the accompanying table.

CLINICAL OBSERVATIONS

The symptom complex corresponds very closely with the description of mild typhus described by Brill. The onset was abrupt, usually with severe headache and pain in back of neck, flushed face, weakness, and fever. Chills or chilly sensations were not unusual. Nausea and sometimes vomiting occurred during the first few days, but did not persist.

After the onset the fever rose rapidly, reaching maximum during the first week, becoming remittent in the second, with return to normal in about 14 days, usually by lysis but sometimes more abruptly. The shortest course was 7, the longest 25 days.

Eruption appeared on the third to sixth day, usually first on abdomen, chest, and upper arms, later spreading to the back and extremities, rarely to the face. In some cases a preliminary dusky mottling of the skin was noted, particularly in the interscapular region of the back. The spots appeared at first small and discrete, could not be felt, were apparently erythematous in character, dull red in color; later they became irregular in size, some slightly raised, color becoming darker, and some did not disappear on pressure, being petechial. In two cases multicolored stains remained in interscapular region after the receding of the rash, as if there had been subcutaneous extravasation. The rash usually lasted until convalescence was established.

Severity.—Of the cases investigated, 4 were mildly, 13 moderately, and 3 critically ill. There were no fatalities. Complications were infrequent. Mental symptoms were insignificant. Three cases were slightly delirious at times, early in their course; the majority were slightly dull and apathetic; others showed no mental change at all. Respiratory symptoms were limited to a characteristic slight cough in all cases and bloody sputum in two. One case had bronchopneumonia, acute laryngitis, and pharyngitis.

LABORATORY FINDINGS

Blood specimens were obtained in 15 of the cases. Using the X 19 strain of *B. proteus*, the Weil-Felix reaction was definitely positive in 12 cases and doubtful in three; of the latter, one was taken too early in the course of the disease to render the result significant. The blood serums showed no tendency to agglutinate the typhoid or paratyphoid organisms except in cases where there was a previous history of the disease or vaccination.

Guinea pigs were inoculated intraperitoneally with 2 to 4 c. c. of defibrinated blood from four patients in the early stages of the disease. Seven of these guinea pigs survived the full period of observation and failed to show the febrile reaction which is expected in typhus. Five of these were subsequently tested for immunity to known typhus virus from Polish sources at the Hygienic Laboratory, United States Public Health Service.[1] No evidence of immunity was found. This series, however, is considered too small to warrant conclusions.

Leucocyte counts made on six of the cases showed nothing distinctive, ranging about or slightly above the normal count. Differential counts were likewise within the normal range.

EPIDEMIOLOGICAL OBSERVATIONS

The clinical and laboratory evidence indicated that the disease under consideration was a mild form of typhus fever. Attempt was made to establish the source of the infection and the modes of its transmission.

It seemed logical to assume in the first place that the disease had been imported from the endemic areas of Mexico, either directly or through spread from the other side of the Rio Grande River. Inquiry in Carmago, the nearest Mexican town, failed to reveal the presence of the disease there. Physicians practicing in Monterey, the nearest large Mexican city, 120 miles distant by direct rail communication, had seen no cases of this type during the past year or more, though the disease prevailed there in former years.

No direct connection could be traced between the cases at Rio Grande City and those at Laredo, Donna, Edinburg, and Alamo. The latter were apparently independent in occurrence.

On the other hand, in studying the individual cases it was sometimes possible to demonstrate close association one with another. Thus the first recognized case in Rio Grande City was that of the county tax collector (case A), a Mexican of ubiquitous contacts on both sides of the Rio Grande River. His sister (case B), who nursed him, and two friends (cases E and F), who visited him during the course of his illness, came down with the same disease shortly afterwards. The first case at Fort Ringgold was in a Mexican who lived at Rio Grande City and worked in the post tailor shop (case D). No direct association could be traced between this man and the next case (H), but the latter was followed by his wife (case I). Again no direct association could be traced between these cases and case K, who came down on July 11; but the latter was followed, 10 days later, by another soldier (case N) from the same squad room. Case

[1] The authors wish to acknowledge their indebtedness to Surg. G. W. McCoy and Passed Asst. Surg. R. E. Dyer for these immunity tests, and to the Eighth Corps Area Laboratories, U. S. Army, for examination of blood specimens

L, a Mexican girl of 13, is known to have played with children in the home of case G while he was ill. The mother and sister of this girl subsequently had the disease (not listed). Case P, onset July 15, in Edinburg, was followed by a case in a neighbor (not listed), who became ill with a 14-day eruptive fever on July 29. While the neighbor had not himself entered the home of "P" he had bought gasoline from him before his illness, and his children went to the "P" home daily for milk. By these instances some degree of direct or indirect contagion is indicated; though one could hardly speak of the disease as "highly contagious," as there was usually only a single case in a family.

The age distribution, it will be noted, was that commonly ascribed to typhus; all of the cases except one—a child of 9—were in adults. Mexicans greatly predominated; but taking into consideration the composition of the population they had only their proportionate share. In 12 of the 20 families the head louse (*P. humanus* var. *capitis*) was found present. No lice or louse exposure was demonstrated in the military cases.

Inasmuch as the body louse (*P. humanus* var. *corporis*) is commonly accepted to be the vector of typhus, search for this parasite was made in each case investigated without success in a single instance. The body louse is of uncommon occurrence among the Mexicans of the lower Rio Grande Valley. Though they are occasionally brought in by recent arrivals from the interior of Mexico, they do not commonly survive in the valley more than a few days—at least during the summer months. This is probably due to the high temperatures, the scanty clothing worn, and the reasonably frequent bathing and washing by the natives. This is common knowledge in the lowlands; and when peons from the Mexican plateau arrive no special means of disinfestation are taken.

On the other hand, the head louse (*P. humanus* var. *capitis*) is omnipresent. Every Mexican family of the poorer class is either constantly or intermittently infested with this insect. Along the border towns 50 per cent or more of the Mexican school children have nits or live insects or both in their hair at all times. It is by all odds the most common biting and blood-sucking insect associated with the cases under investigation.

No observations were made upon ticks, fleas, or bedbugs. The common house mosquito of this section (*Aëdes aegypti* (*Stegomyia calopus*)) was present only in small numbers, owing to the yellow-fever control measures maintained by the United States Public Health Service on the border.

DISCUSSION

The clinical picture presented by these cases impresses one with its extreme mildness when compared with the usual picture in

typical "tabardillo." In the latter the onset is abrupt and the prostration is extreme from the very beginning; nervous symptoms dominate the picture; delirium, coma, and unconsciousness frequently ensue; the skin eruption is definitely hemorrhagic in character; areas of skin necrosis and sloughs may occur; in the uncomplicated cases a majority terminate rapidly about the end of the second week. Complications, such as pneumonia, thrombosis, otitis, deafness, phlegmons, parotitis, etc., are not infrequent. Contrast this with the course in the Rio Grande cases: Only three were considered seriously ill and were slightly delirious on one or two occasions; the others showed dullness or apathy or were mentally clear throughout. The skin eruption was largely macular in character; most of the spots faded on pressure; only a few were definitely petechial; there were no instances of skin gangrene; it lacked a marked hemorrhagic quality in all cases. Most of the cases declined by lysis during the second week; only two showed evidence of pulmonary involvement, although a slight cough was usually present. There were no fatalities. "Tabardillo" is feared because of its high death rate.

This clinical picture is more like that of the cases described by Dr. Nathan Brill as "endemic typhus" than like that of the classical "tabardillo."

That the disease is really typhus is confirmed by the laboratory findings. The specificity of the Weil-Felix reaction in high dilution of serum is at present unquestioned, except in some rare unexplainable instances. Blood obtained during the second week of the illness agglutinated the Proteus X 19 in 12 out of 15 cases, as shown by the table.

The occurrence of indigenous cases of typhus in the Rio Grande Valley is a new concept to most of the physicians interviewed in the American towns along the border. On the other hand, within the last 10 years it has come to be appreciated by the Mexican physicians that cases of what appeared to be a very mild form of typhus were occurring in and about the city of Monterey, and in the valley states of Coahuila, Nuevo Leon, and Tamaulipas. At times the disease has attained considerable spread. For instance, Dr. E. Rangel, a prominent internist of Monterey, who does a consulting practice in the surrounding territory, states that he has seen "hundreds" of cases in the last 10 years—as many as 50 in a single year. During this time he recalls having signed only two death certificates naming the disease, a commentary upon its mildness. According to Dr. Antonio de la Garza,[1] this mild form of "tabardillo" has largely passed unrecognized, being denominated by other physicians variously as "general infection," "para-typhoid,"

[1] The form of tabardillo which is observed in the State of Nuevo Leon, Mexico. Memorias y Actas de 20 Congresso National del Tabardillo, Mexico City, 1922.

"malaria," "malarial petechial typhus," "petechial 14-day fever," "14-day fever," etc.

It has been pointed out independently by Doctor Rangel that certain clinical and epidemiological differences distinguish this disease of the lowlands from the classical "tabardillo" of the interior, viz: The extreme mildness of the disease; relative absence of nervous manifestations; absence of severe skin involvement, etc., and relative absence of complications of any sort; shorter duration and a greater percentage terminating by lysis; and a case fatality of less than two per cent. He also noted that this disease has become widespread in a population where there are few body lice, though there are many head lice; that lice are not observed in a great many instances; that many cases have occurred among the better class of people in Monterey who are free from vermin of any sort; that it is rare to observe more than one case in a household; and that the disease prevails principally in the summer and fall months.

The disease, which was investigated on the American side in the vicinity of Rio Grande City, was evidently of this same mild variety. Cases were demonstrated also at Laredo, Edinburg, Alamo, and Donna. A prominent Mexican physician at Laredo stated that he had had an outbreak of 17 cases of this type in his practice in that city two years ago. These and other facts lead us to believe that mild typhus—perhaps a permanently attenuated strain—is endemic in the lower Rio Grande Valley and has been there for some years, occurring sporadically, not attaining a very wide spread, and largely passing unrecognized under the name of paratyphoid fever, Rio Grande fever, etc.

The mode of spread here is not altogether clear. According to present information the body louse (*Pediculus humanus* var. *corporis*) does not survive for a sufficiently long period of time in the warm climate of the lowlands, nor is it sufficiently ubiquitous to act effectively as a vector. On the other hand, the head louse (*P. humanus* var. *capitis*) is sufficiently widely distributed and commonly found in the families where cases occur. Epidemiological evidence is thus brought to support the experimental work of Anderson and Goldberger [1] and others which has tended to show that *capitis* may be similarly concerned in the transmission of this disease. The work of Nutall and his collaborators has emphasized the fact that *corporis* and *capitis* are no more than different races of the same species—*P. humanus.* It seems not unlikely, therefore, that *P. humanus* var. *capitis* may be the vector responsible for the transmission of these mild cases occurring in the Rio Grande Valley.[2]

[1] Anderson and Goldberger: Bull. No. 86, Hygienic Lab., United States Public Health Service, Washington, D. C., 1912; Toepfer: Deutsch. Med. Wchnschr., 1916, xlii, 1251; Nicolle: Bull. de l'Inst. Pasteur, 1920, xviii, 49; Foster: Arch. Int. Med., 1915, xvi, 363.

[2] Acknowledgments: The authors gratefully acknowledge the assistance given by Maj. Fletcher Gardner, Dr. G. W. Edgerton, Dr. James Makins, and Dr. J. W. Mahone for investigations of cases on the American side, and to Doctors Rangel and Barragan, of Monterrey, for information concerning the disease on the Mexican side.

CONCLUSION

Mild typhus (Brill's disease) is endemic in the lowlands along the Rio Grande Valley.

Summary of cases of typhus observed in Rio Grande Valley in July, 1924

Case designation	Location	Nationality	Sex	Age	Date of onset	Duration, days	Clinical observation	Weil-Felix	
								Day	Titer
A	Rio Grande City	Mexican	M.	43	May 22	22	No		
B	do	do	F.	43	June 21	15	No		
C	do	do	F.	20	June 23	14	No		
D	do / Fort Ringgold	do	M.	18	do	14	No	31st	Pos. 1/1300.
E	Rio Grande City	do	M.	41	June 26	14	No	26th	Pos. 1/1300.
F	do	do	M.	30	June 27	21	Yes	25th	Pos. 1/1300.
G	do	do	M.	58	June 28	16	Yes	24th	Pos. 1/1300.
J	do	do	M.	9	July 10	9	No		
T	do	do	F.	25	July 12	14	Yes	9th	Negative.[1]
L	do	do	F.	13	July 17	12	Yes	6th	Pos. 1/320.
O	do	do	F.	28	July 21	8	Yes		
H	Fort Ringgold	American	M.	30	June 30	10	Yes	20th	Negative.[1]
I	do	do	F.	18	July 5	5	Yes	15th	Negative.[1]
K	do	do	M.	20	July 11	6	Yes	6th	Pos. 1/640.
M	do	Portuguese	M.	27	July 20	10	Yes	9th	Pos. 1/1300.
N	do	American	M.	21	July 21	12	Yes	8th	Pos 1/160.
P	Edinburg	American	M.	19	July 15	14	Yes	8th	Pos. 1/5000.
Q	Donna	Mexican	F.	67	July 10	14	Yes	11th	Pos. 1/160.
R	Laredo	do	M.	15	July 19		Yes	9th	Pos. 1/160.
S	Alamo	do	M.	25	July 20		Yes	10th	Pos. 1/640.

[1] Agglutination in dilution of less than 1/80 was considered negative.

CURRENT WORLD PREVALENCE OF DISEASE

REVIEW OF THE MONTHLY EPIDEMIOLOGICAL REPORT FOR DECEMBER 15, 1924, ISSUED BY THE HEALTH SECTION OF THE LEAGUE OF NATIONS' SECRETARIAT*

Health conditions throughout the world seem not to have been disturbed by any unusual or special epidemic prevalence during the months of October and November, 1924, judging by data made available in the December number of the Epidemiological Report issued by the Health Section of the League of Nations' Secretariat. Mortality from all causes in a number of large cities scattered over the world showed some seasonal increases but agreed very closely with the corresponding periods of 1923.

Infant mortality in the German cities continued well below that of 1923 and showed a much smaller summer increase in 1924 than occurred in 1923. In Vienna the infant mortality is very close to the level of the German cities and has had much the same seasonal fluctuations. For the four weeks ended November 1, 1924, an annual rate of 90 deaths under 1 year of age per 1,000 living births was reported in the German cities and 88 deaths in Vienna, as compared with a rate of 72 deaths per 1,000 living births in the 105 large English cities in the same period. Infant mortality in the English

*From the Statistical Office, United States Public Health Service.

cities has been increasing since August, and the October and November rates were slightly higher than at the same date in 1923.

Special comments made in the report on certain of the infectious diseases are very briefly summarized below.

Plague.—Reports from British India for the four weeks ended October 11 showed 2,991 deaths from plague, a small increase over preceding weeks. The increase was noted "especially in southern India, where the autumn is usually the season of greatest prevalence, as contrasted with the plains of northern India, where the outbreaks are most frequent in the spring." The incidence was far below that of the corresponding period of 1923, when 15,978 plague deaths were returned.

Little change is indicated in the plague situation in Java, where 556 deaths were reported for the two weeks ended October 13, and 656 during the preceding two weeks. Except for 1 death at Cheribon, in Java, and 3 deaths at Macassar, on the island of Celebes, no plague was reported in the ports of the Dutch East Indies in October.

Only an occasional, sporadic case of plague was reported from Egypt during the autumn. In Nigeria the outbreak of plague in Lagos appears to have culminated in the beginning of October, 65 cases having been notified during the fortnight ended November 10, against 85 and 100 cases, respectively, in the two preceding fortnights. In other plague centers of Central Africa the plague incidence seemed to be diminishing. The Union of South Africa reported an increase in plague incidence, with 25 cases and 18 deaths notified in the period from October 6 to December 10.

Cholera.—The cholera incidence in British India declined in September and the first half of October, but, nevertheless, remained higher than at the same season in the preceding two years. Three cases were reported from Dairen, Manchuria, as occurring in August, a few cases were reported from French India, Indo-China, Siam, and the Philippine Islands for September, and three cases from Ceylon for the six weeks from October 5 to November 15.

Typhus and relapsing fever.—No definite increases in either of these diseases was indicated for any of the European countries. Recent data for the whole of Russia were lacking, but only six cases of typhus had been notified in Leningrad during the three weeks ended October 25, and no case of relapsing fever had been notified for seven weeks up to that date.

The September incidence of typhus in the Union of South Africa was much lower than in 1923 and 1922.

A small outbreak of relapsing fever was noted in Nigeria, and a few cases were reported from other colonies in tropical Africa.

Smallpox.—The incidence of smallpox continues low on the European continent. In England, however, 318 cases were reported for the four weeks ended November 29, as compared with 223 in the

preceding four weeks; 152 cases were notified in 1923 and 82 in 1922 during the corresponding period.

An increase was shown for the United States, where 27 States notified 1,340 cases during the four weeks ended November 1, as compared with 968 and 777 cases, respectively, during the two preceding four-week periods.

Smallpox was increasingly prevalent in Tunisia, but the incidence in central and southern Africa was lower than during previous years.

Typhoid fever.—A considerably increased prevalence of typhoid fever in the greater part of Europe in 1924 is shown. It was particularly marked in the Baltic region, where the late summer and autumn incidence reported was much higher than during the preceding two years, especially in Sweden, Finland, Esthonia, and Latvia. An unusually large number of cases was notified also in Germany, Poland, Bulgaria, and the Kingdom of the Serbs, Croats, and Slovenes; and less marked increases over 1923 are shown for Czechoslovakia, France, and England and Wales. Comparative data for 1924 and 1923 are given in the table below for a number of European countries:

Cases of typhoid fever notified in various European countries in 1923 and 1924

Month	France		Sweden		Finland		Latvia		Czechoslovakia		Bulgaria	
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924
January	328	548	124	66	80	29	81	77	344	510	204	244
February	351	536	75	63	72	36	81	83	290	361	135	162
March	425	441	35	93	116	26	72	85	341	351	132	110
April	653	363	25	41	93	60	78	63	268	446	112	66
May	455	445	67	42	100	54	67	73	255	322	91	32
June	375	473	69	78	100	53	80	140	287	476	63	72
July	438	579	46	131	262	75	76	227	390	645	82	134
August	532	720	90	213	137	178	127	243	568	805	163	264
September	690	715	86	257	156	221	101	236	771	690	332	606
October	692	626	64	249	280	499	113	129	775	805	464	------

Four weeks ended—	England and Wales		Netherlands		Germany		Poland		Kingdom of Serbs, Croats, and Slovenes		Italy	
	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924	1923	1924
Jan. 26	152	204	86	71	555	778	1,190	951	200	287	630	1,441
Feb. 23	203	218	100	64	497	733	1,050	918	236	217	498	935
Mar. 22	207	156	95	59	597	608	933	665	150	172	459	651
Apr. 19	196	174	92	72	584	656	732	596	145	134	511	634
May 17	183	280	108	69	647	586	708	572	122	170	622	644
June 14	177	369	81	68	725	722	686	605	87	122	873	820
July 12	253	578	107	81	1,049	1,125	723	715	147	159	1,210	1,432
Aug. 9	309	386	187	132	1,289	1,680	805	1,060	262	298	2,390	2,153
Sept. 6	341	376	113	155	1,620	1,967	1,081	1,546	348	471	4,109	3,469
Oct. 4	416	451	164	136	1,660	1,890	1,500	2,374	584	1,113	4,816	3,982
Nov. 1	370	422	143	109	1,376	1,545	1,904	------	498	------	3,777	3,416
Nov. 29	235	242	115	108	1,410	------	1,541	------	472	------	3,231	------

Data compiled from the Public Health Reports for 34 States show that typhoid fever was somewhat less prevalent in the United States throughout the summer and early autumn than in 1923, but in December a rise in cases occurred instead of the usual decline, making a considerable excess of cases in this month over 1923.

Cases of typhoid fever reported in 34 States of the United States in 1923 and 1924

Year	Four-week period ended—							
	June 14	July 12	Aug. 9	Sept. 6	Oct. 4	Nov. 1	Nov. 29	Dec. 27
1924	1,140	1,624	2,776	3,229	3,179	2,295	1,850	2,068
1923	1,039	1,880	3,100	3,495	3,310	2,239	1,795	1,336

The unusual December prevalence in the United States was due mostly to an increase of typhoid fever in New York City, where 500 cases were reported in the four weeks ended December 27, and an additional 182 cases in the remainder of the State. However, the November and December reports indicate that increases occurred also in Louisiana, Texas, and Oklahoma; and in many other States the number of cases was slightly in excess of the 1923 incidence.

Dysentery.—While dysentery is not an important problem in western and northern Europe, many regions of central and eastern Europe are still seriously affected by it. The incidence is diminishing in most of central Europe; fewer cases than in 1923 were notified in Germany, Austria, Czechoslovakia, Hungary, Italy, and in the Balkans. In Poland, on the other hand, it has been more prevalent than in 1923, and 2,610 cases were notified in the three weeks ended October 25 as against 1,259 cases in the preceding three weeks and 622 cases in the corresponding three weeks of 1923.

Influenza.—No important outbreaks of influenza were shown in the statistics available for October and November.

Lethargic encephalitis.—No change in the prevalence of lethargic encephalitis has occurred since the preceding Epidemiological Report was issued. Returns for England and Wales for November showed it still unusually prevalent there; 171 cases were notified during the four weeks ended November 29, as compared with 170 during the preceding four weeks. In the United States the incidence of this disease continued low, only 42 cases being reported from 27 States during the four weeks ended November 1.

Acute poliomyelitis.—The incidence of acute poliomyelitis was diminishing in October in Sweden, Denmark, England and Wales, and the United States; it has been more epidemic in these countries in 1924 than for several years. In Canada a sudden increase in cases is noted for the month of September.

Cases of acute poliomyelitis notified in various countries in 1923 and 1924

Country	Year	Month				
		June	July	August	September	October
Canada	1924	0	1	9	101	----------
Denmark	1924	2	11	21	45	39
	1923	3	3	14	10	21
Sweden	1924	13	25	108	192	155
	1923	4	10	29	80	74

Country	Year	Four-week period ended—					
		July 12	Aug. 9	Sept. 6	Oct. 4	Nov. 1	Nov. 29
England and Wales	1924	50	101	137	11[illegible]	118	90
	1923	25	55	87	120	92	42
Germany	1924	26	63	74	85	82	----------
United States (27 States)	1924	53	*183	654	811	664	----------
	1923	56	175	367	393	365	----------

* Data for three weeks only.

Cerebrospinal meningitis.—The outbreak of epidemic cerebrospinal meningitis in Japan in August, September, and November, 1924, is of especial interest, because at about the same time an epidemic of "an indefinite disease involving the central nervous system" occurred.[1] It will be recalled that between the latter part of July and the end of September, 6,551 cases of this unidentified disease were reported; from August 10 to October 18, 1,398 cases of epidemic cerebrospinal meningitis and 1,619 suspected cases, a total of 3,017 cases, were reported. The reports by weeks are as follows:

	Week ended—										Total
	August			September				October			
	16	23	30	6	13	20	27	4	11	18	
Cerebrospinal meningitis	199	250	288	217	122	113	124	59	18	8	1,398
Suspected cerebrospinal meningitis	0	22	121	447	451	285	159	64	43	27	1,619

The Monthly Epidemiological Report comments as follows:

The first serious outbreak of meningitis was reported during the week ending August 16 in the Province of Tokushima, on the island of Shikoku. This province is situated south of Kagawa, which later became the principal center of the general epidemic. The outbreak must have come very suddenly, because only four cases of cerebrospinal meningitis were notified in the whole of Japan during the week ending August 2. A large number of cases was reported also from the Province of Okayama, north of the Inland Sea.

[1] Public Health Reports, Dec. 12, 1924, pp. 3125–3129.

The distribution of the cases of cerebrospinal meningitis and of suspected cases by provinces is given in the table below, together with the number of cases of the unidentified disease reported in each province from the beginning of the epidemic in July up to September 29.

Cases and suspected cases of epidemic cerebrospinal meningitis notified in Japan from August 10 to October 18, 1924, and cases of the "unidentified disease" notified from July to September 29, 1924

Province	Cases notified as cerebrospinal meningitis, Aug. 10–Oct. 18	Suspected cases of cerebrospinal meningitis, Aug 10–Oct. 18	Cases of "unidentified disease," July to September 29	Province	Cases notified as cerebrospinal meningitis, Aug. 10–Oct. 18	Suspected cases of cerebrospinal meningitis, Aug. 10–Oct. 18	Cases of "unidentified disease," July to September 29
Ahichi	7	1	1	Nagasaki	17	24	21
Akita	176	0	105	Nakayama	6	9	44
Aomori	4	94	78	Nara	1	0	7
Ehime	4	46	254	Nigata	1	67	72
Fukui	0	4	19	Oita	1	1	2
Fukuoka	22	121	112	Okayama	379	275	654
Fukushima	2	8	11	Okinawa	1	0	0
Gifu	0	9	7	Osaka	29	0	57
Gumma	2	10	11	Saga	0	0	2
Hiroshima	132	144	181	Saitama	3	0	3
Hokkaido	9	6	4	Shiga	0	0	7
Hyogo	19	0	725	Shimane	26	54	105
Ibaraki	5	12	27	Shisoka	4	3	3
Ishikawa	0	13	12	Thiba	4	4	4
Iwate	26	0	0	Tochigi	2	0	4
Kagawa	4	132	1,963	Tokushima	229	0	316
Kagoshima	4	0	4	Tokyo	96	61	59
Kanagawa	17	0	16	Tottori	31	133	420
Kochi	30	29	99	Toyama	0	0	712
Kumamoto	3	2	4	Yamagata	4	15	17
Kyoto	9	21	56	Yamaguchi	71	80	129
Miyagi	7	31	28	Yamanashi	1	2	3
Miyazaki	0	0	0				
Myie	2	0	0	Total	1,398	1,619	6,551
Nagano	8	202	193				

In general, considerable similarity in the distribution of the two epidemics is indicated, with the Provinces of Hyogo and Toyama as marked exceptions, these two Provinces having had little or no meningitis reported and over 700 cases each of the unidentified disease. It is to be hoped that further information on these two epidemics will be made available.

A further brief notation in the Epidemiological Report is of interest as follows:

> A number of the cases of cerebrospinal meningitis are said to have been bacteriologically verified, but many of them, especially of the suspected cases, may quite well be cases of the unidentified epidemic disease, inasmuch as the measures of control ordered by the Central Sanitary Administration were those in force for cerebrospinal meningitis.

Scarlet fever.—Scarlet fever was more prevalent than at the same season of 1923 in Great Britain, Scandinavia, Poland, the Netherlands, and Germany. A serious increase of scarlet fever is indicated

for many widely separated regions of Russia, but data for the whole country later than July were not available.

Cases of scarlet fever notified at Leningrad were as follows:

Four-week period ended—	Cases	Deaths	Four-week period ended—	Cases	Deaths
Aug. 9	193	24	Oct. 4	542	86
Sept. 6	314	35	Nov. 1	628	78

The cities of Moscow, Kiev, and Odessa have shown increases in the number of cases; and the governments of Gomel, in White Russia, Velikij, Ustiug, in the north, Rostov on the Don, and Petrozavodsk, near the Baikal Sea, are mentioned as being affected. It is stated that "the fatality rate is very high, and severe cases among adults are reported to be frequent."

The incidence of scarlet fever is now relatively low in the Kingdom of the Serbs, Croats, and Slovenes, and in Bulgaria, where serious epidemics existed at the end of the year 1923.

Diphtheria.—"Diphtheria is also reported with somewhat higher frequency than during the corresponding period of last year in Great Britain, the Netherlands, and Germany. In other European countries its prevalence is normal for the time of the year." Australia and New Zealand seem to have had a higher incidence of diphtheria in 1924 than in 1923. October data for the United States showed diphtheria to be less prevalent than at the corresponding date in 1923.

Trachoma.—Notifications of trachoma for a number of countries are given regularly in the Epidemiological Report. The table published in the Epidemiological Report is reproduced below:

Country	Quarter				Period included in incomplete quarters
	I	II	III	IV	
Austria	90	50	58	[1] 35	3 weeks.
Czechoslovakia	766	804	644	[1] 251	1 month.
Danzig	8	6	15	[1] 11	8 weeks.
Esthonia	161	121	102	[1] 47	1 month.
France	[2]	38	12	[1] 3	Do.
Germany	288	454	528	[1] 279	6 weeks.
New Zealand	11	2	2	[1] 2	3 weeks.
Panama Canal Zone	1	0	3		
Poland	496	870	940	[1] 194	4 weeks.
Switzerland	3	1	6	[1] 1	7 weeks.
Ukraine	6,172	11,529			
United States (24 States)	257	841	[1] 345	[1] 318	12 weeks (III); 7 weeks (IV).

[1] Quarter not complete. [2] Not notifiable during first quarter.

DEATHS DURING WEEK ENDED JANUARY 24, 1925

Summary of information received by telegraph from industrial insurance companies for week ended January 24, 1925, and corresponding week of 1924. (From the Weekly Health Index, January 27, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended January 24, 1925	Corresponding week, 1924
Policies in force	58,444,053	54,764,586
Number of death claims	12,053	10,732
Death claims per 1,000 policies in force, annual rate	10.8	10.2

Deaths from all causes in certain large cities of the United States during the week ended January 24, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, January 27, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Jan 24, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Jan. 24, 1925[2]
	Total deaths	Death rate[1]		Week ended Jan. 24, 1925	Corresponding week, 1924	
Total (63 cities)	7,454	14.2	[3] 13.6	868	[3] 831	--------
Akron	34	--------	--------	3	2	33
Albany[4]	41	17.9	13.6	3	6	67
Atlanta	85	19.1	21.8	11	16	--------
Baltimore[4]	259	17.0	16.1	20	22	58
Birmingham	62	15.7	16.9	7	10	--------
Boston	249	16.6	11.4	32	28	85
Bridgeport	33	--------	--------	4	3	64
Buffalo	127	12.0	14.2	19	20	77
Cambridge	49	22.7	13.5	7	2	120
Camden	44	17.8	15.3	9	6	148
Chicago[4]	718	12.5	12.0	103	85	91
Cincinnati	144	18.3	15.3	20	17	118
Cleveland	202	11.2	11.2	32	30	79
Columbus	88	16.8	14.2	8	3	75
Dallas	63	17.0	15.0	17	7	--------
Dayton	32	9.6	7.4	2	3	32
Denver	100	--------	--------	13	6	--------
Des Moines	21	7.3	13.3	5	6	86
Detroit	253	--------	--------	38	36	64
Duluth	15	7.1	11.5	4	2	85
Erie	25	--------	--------	5	0	98
Fall River[4]	21	9.0	12.5	5	6	72
Flint	13	--------	--------	2	3	33
Fort Worth	28	9.6	6.7	3	1	--------
Grand Rapids	38	13.1	11.2	4	4	62
Houston	63	--------	--------	10	7	--------
Indianapolis	102	14.8	12.6	7	13	48
Jacksonville, Fla	35	17.4	23.4	2	8	44
Jersey City	84	13.9	10.4	10	12	70
Kansas City, Kans	32	13.5	8.6	10	5	211
Kansas City, Mo	96	13.6	16.8	12	18	--------
Los Angeles	266	--------	--------	28	30	78
Louisville	81	16.3	16.3	5	3	44
Lowell	21	9.4	13.5	1	4	17
Lynn	28	13.9	13.6	1	4	27
Memphis	97	29.0	13.0	8	4	--------
Milwaukee	96	10.0	10.0	20	12	91
Minneapolis	105	12.9	11.6	19	10	102
Nashville[4]	41	18.5	20.3	9	2	--------
New Bedford	25	9.6	11.0	5	7	83
New Haven	55	16.0	13.6	5	6	65
New Orleans	162	20.4	23.4	21	17	--------
New York	1,603	13.7	12.4	157	174	63
Bronx Borough	189	10.9	9.5	13	16	45
Brooklyn Borough	508	13.2	11.6	59	72	62
Manhattan Borough	679	15.7	11.6	73	74	73
Queens Borough	134	12.2	10.3	12	11	60
Richmond Borough	33	12.9	18.0	0	1	0

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1923. Cities left blank are not in the registration area for births.
[3] Data for 62 cities.
[4] Deaths for week ended Friday, Jan. 23, 1925.

Deaths from all causes in certain large cities of the United States during the week ended January 24, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, January 27, 1925, issued by the Bureau of the Census, Department of Commerce)—Contd.

City	Week ended Jan. 24, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Jan. 24, 1925
	Total deaths	Death rate		Week ended Jan. 24, 1925	Corresponding week, 1924	
Newark, N. J.	127	14.6	11.6	18	15	82
Norfolk	40	12.3	8.9	3	3	53
Oakland	59	12.1	15.0	7	4	82
Omaha	59	14.5	14.3	8	2	77
Paterson	40	14.7	15.9	2	4	34
Philadelphia	563	14.8	14.6	54	62	68
Pittsburgh	230	19.0	16.4	32	40	112
Portland, Oreg.	66	12.2	12.2	3	11	31
Providence	69	14.7	14.3	6	10	48
Richmond	72	20.1	13.6	8	4	97
Rochester	72	11.3	...	5	...	40
St. Louis	251	15.9	15.3	22	7	...
St. Paul	60	12.7	13.5	4	10	34
Salt Lake City [4]	33	13.1	15.0	6	6	94
San Antonio	69	18.2	17.4	15	10	...
San Francisco	158	14.8	17.0	7	13	40
Schenectady	32	16.3	8.3	6	1	169
Seattle	63	...	...	6	5	61
Somerville	19	9.7	11.4	2	2	54
Spokane	33	...	...	6	1	131
Springfield, Mass.	34	11.6	16.5	5	9	74
Syracuse	48	13.1	11.4	6	4	75
Tacoma	20	10.0	13.2	0	1	0
Toledo	62	11.2	12.8	12	8	109
Trenton	48	19.0	18.1	5	3	81
Utica	27	13.1	13.4	5	3	103
Washington, D. C.	140	14.7	14.3	13	9	73
Waterbury	24	...	...	4	5	88
Wilmington, Del.	35	15.0	14.8	5	4	114
Yonkers	24	11.2	11.9	3	5	66
Youngstown	45	14.7	13.1	3	8	38

[4] Deaths for week ended Friday, Jan. 23, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended January 31, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	1
Chicken pox	58
Diphtheria	29
Dysentery	2
Influenza	610
Lethargic encephalitis	1
Malaria	11
Measles	15
Mumps	60
Pellagra	2
Pneumonia	152
Scarlet fever	20
Smallpox	259
Trachoma	18
Tuberculosis	29
Typhoid fever	9
Whooping cough	11

ARIZONA

	Cases
Chicken pox	11
Diphtheria	5
Measles	163
Mumps	19
Ophthalmia neonatorum	1
Scarlet fever	7
Smallpox	22
Tuberculosis	14
Whooping cough	2

ARKANSAS

	Cases
Cerebrospinal meningitis	1
Chicken pox	25
Diphtheria	6
Influenza	293
Malaria	16
Measles	31
Mumps	51
Pellagra	3
Scarlet fever	13
Smallpox	18
Tuberculosis	9
Typhoid fever	7
Whooping cough	2

CALIFORNIA

	Cases
Cerebrospinal meningitis:	
Compton	1
Los Angeles	3
Diphtheria	143
Influenza	72
Measles	41
Poliomyelitis:	
Alhambra	1
Berkeley	2
Contra Costa County	1
Oakland	1
Scarlet fever	160
Smallpox:	
Los Angeles	38
Los Angeles County	21
Oakland	10
San Diego	38
Scattering	46
Typhoid fever	6

COLORADO

(Exclusive of Denver)

	Cases
Chicken pox	48
Diphtheria	15
Measles	2
Mumps	30
Pneumonia	4
Scarlet fever	38
Tuberculosis	69
Typhoid fever	7
Vincent's angina	1
Whooping cough	10

CONNECTICUT

	Cases
Cerebrospinal meningitis	1
Chicken pox	75
Diphtheria	44
German measles	16
Influenza	7
Lethargic encephalitis	2
Measles	124
Mumps	36

CONNECTICUT—continued

	Cases
Ophthalmia neonatorum	1
Pneumonia (all forms)	95
Scarlet fever	164
Septic sore throat	4
Trachoma	1
Tuberculosis (all forms)	29
Typhoid fever	7
Whooping cough	77

DELAWARE

Chicken pox	3
Diphtheria	11
Influenza	4
Measles	3
Pneumonia	10
Scarlet fever	4
Tuberculosis	7
Whooping cough	1

FLORIDA

Diphtheria	15
Influenza	25
Malaria	7
Scarlet fever	3
Typhoid fever	20

GEORGIA

Chicken pox	11
Diphtheria	6
Hookworm disease	7
Influenza	242
Mumps	55
Pneumonia	15
Scarlet fever	5
Smallpox	3
Tuberculosis	4
Whooping cough	6

ILLINOIS

Cerebrospinal meningitis—Cook County	1
Diphtheria:	
Cook County	75
Sangamon County	8
Scattering	44
Influenza	39
Lethargic encephalitis—Cook County	3
Measles	439
Pneumonia	311
Poliomyelitis:	
Cook County	1
Cass County	1
Jackson County	1
Scarlet fever:	
Cook County	302
Kane County	17
Knox County	11
Peoria County	17
St. Clair County	20
Schuyler County	18
Scattering	113
Smallpox:	
Madison County	14
St. Clair County	12
Scattering	37
Tuberculosis	218
Typhoid fever	11
Whooping cough	276

INDIANA

	Cases
Chicken pox	119
Diphtheria	39
Influenza	45
Measles	111
Mumps	4
Pneumonia	11
Scarlet fever	194
Smallpox	121
Trachoma	3
Tuberculosis	30
Typhoid fever	7
Whooping cough	27

IOWA

Diphtheria	31
Scarlet fever	81
Smallpox	47

KANSAS

Cerebrospinal meningitis	2
Chicken pox	135
Diphtheria	37
Influenza	12
Measles	8
Mumps	455
Ophthalmia neonatorum	1
Pneumonia	89
Scarlet fever	145
Smallpox	5
Trachoma	2
Tuberculosis	36
Typhoid fever	3
Whooping cough	70

LOUISIANA

Anthrax	1
Diphtheria	16
Hookworm disease	6
Influenza	86
Malaria	6
Pneumonia	33
Rabies	1
Scarlet fever	20
Smallpox	74
Tuberculosis	31
Typhoid fever	24
Whooping cough	10

MAINE

Cerebrospinal meningitis	1
Chicken pox	47
Diphtheria	4
German measles	6
Influenza	6
Measles	2
Mumps	57
Pneumonia	50
Poliomyelitis	1
Scarlet fever	22
Septic sore throat	1
Tuberculosis	13
Typhoid fever	4
Vincent's angina	4
Whooping cough	52

MARYLAND [1]

	Cases
Chicken pox	66
Diphtheria	34
German measles	3
Influenza	105
Measles	58
Mumps	36
Pneumonia (all forms)	104
Scarlet fever	97
Septic sore throat	5
Tuberculosis	66
Typhoid fever	10
Whooping cough	82

MASSACHUSETTS

Cerebrospinal meningitis	3
Chicken pox	310
Conjunctivitis (suppurative)	22
Diphtheria	121
German measles	203
Influenza	21
Lethargic encephalitis	6
Measles	322
Mumps	75
Ophthalmia neonatorum	45
Pneumonia (lobar)	137
Poliomyelitis	2
Scarlet fever	352
Septic sore throat	2
Tetanus	1
Trichinosis	5
Tuberculosis (all forms)	123
Typhoid fever	8
Whooping cough	142

MICHIGAN

Diphtheria	95
Measles	125
Pneumonia	130
Scarlet fever	298
Smallpox	49
Tuberculosis	177
Typhoid fever	11
Whooping cough	152

MINNESOTA

Cerebrospinal meningitis	2
Chicken pox	147
Diphtheria	66
Lethargic encephalitis	1
Measles	31
Pneumonia	4
Scarlet fever	252
Smallpox	76
Trachoma	3
Tuberculosis	95
Typhoid fever	2
Whooping cough	47

MISSISSIPPI

Cerebrospinal meningitis	1
Diphtheria	18
Scarlet fever	4
Smallpox	16
Typhoid fever	11

[1] Week ended Friday.

MISSOURI

(Exclusive of Kansas City)

	Cases
Cerebrospinal meningitis	1
Chicken pox	58
Diphtheria	83
Influenza	32
Measles	7
Mumps	33
Pneumonia	10
Scarlet fever	223
Septic sore throat	2
Smallpox	17
Trachoma	4
Tuberculosis	33
Typhoid fever	7
Whooping cough	21

MONTANA

Diphtheria	5
Scarlet fever	33
Smallpox	1
Typhoid fever	1

NEBRASKA

Chicken pox	19
Diphtheria	11
Influenza	5
Measles	3
Mumps	7
Scarlet fever	25
Septic sore throat	1
Smallpox	23
Typhoid fever	4
Whooping cough	3

NEW JERSEY

Cerebrospinal meningitis	1
Chicken pox	197
Diphtheria	86
Influenza	17
Measles	115
Pneumonia	148
Scarlet fever	260
Smallpox	13
Typhoid fever	7
Whooping cough	217

NEW MEXICO

Chicken pox	17
Diphtheria	2
German measles	2
Influenza	29
Measles	13
Mumps	10
Pneumonia	23
Scarlet fever	6
Tuberculosis	10
Typhoid fever	2
Whooping cough	2

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	5
Diphtheria	117
Influenza	42
Lethargic encephalitis	6

NEW YORK—continued

	Cases
Measles	195
Pneumonia	267
Poliomyelitis	1
Scarlet fever	306
Smallpox	3
Typhoid fever	80
Whooping cough	245

NORTH CAROLINA

Cerebrospinal meningitis	2
Chicken pox	131
Diphtheria	40
German measles	4
Measles	27
Scarlet fever	29
Septic sore throat	6
Smallpox	95
Typhoid fever	1
Whooping cough	145

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Cerebrospinal meningitis—Harper County	1
Diphtheria	14
Influenza	582
Pneumonia	169
Typhoid fever	9

OREGON

Chicken pox	18
Diphtheria:	
Portland	24
Scattering	11
Influenza	1
Measles	3
Mumps	15
Pneumonia	[1] 6
Poliomyelitis	1
Scarlet fever:	
Portland	8
Scattering	35
Smallpox:	
Portland	11
Scattering	8
Tuberculosis	15
Typhoid fever	[1] 1
Whooping cough	10

SOUTH DAKOTA

Chicken pox	12
Diphtheria	4
Measles	6
Pneumonia	4
Scarlet fever	21
Smallpox	6
Tuberculosis	12
Typhoid fever	1

TEXAS

Chicken pox	58
Dengue	3
Diphtheria	28
Dysentery (epidemic)	2
Influenza	887
Measles	15

[1] Deaths.

TEXAS—continued

	Cases
Mumps	73
Ophthalmia neonatorum	1
Pellagra	3
Pneumonia	69
Scarlet fever	28
Smallpox	21
Trachoma	4
Tuberculosis	14
Typhoid fever	15
Whooping cough	18

VERMONT

Chicken pox	36
Measles	1
Mumps	43
Scarlet fever	17
Typhoid fever	1
Whooping cough	7

VIRGINIA

Cerebrospinal meningitis—Augusta County	1
Lethargic encephalitis—Carroll County	1
Poliomyelitis—Accomac County	1

WASHINGTON

Chicken pox	139
Diphtheria	47
German measles	79
Measles	1
Mumps	117
Pneumonia	3
Poliomyelitis—Thurston County	1
Scarlet fever	31
Smallpox	19
Tuberculosis	33
Typhoid fever	5
Whooping cough	30

WEST VIRGINIA

Cerebrospinal meningitis—Wheeling	1
Diphtheria	11
Scarlet fever	14
Smallpox	5
Typhoid fever	5

WISCONSIN

Milwaukee:	
Cerebrospinal meningitis	1
Chicken pox	32
Diphtheria	11
German measles	206
Influenza	2
Measles	219
Mumps	55
Ophthalmia neonatorum	1
Pneumonia	3
Scarlet fever	19
Smallpox	2
Tuberculosis	14
Whooping cough	23
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	230
Diphtheria	44
German measles	28
Influenza	41

WISCONSIN—continued

	Cases
Scattering—Continued.	
Measles	82
Mumps	253
Pneumonia	32
Scarlet fever	162
Smallpox	74
Tuberculosis	22
Typhoid fever	1
Whooping cough	154

WYOMING

	Cases
Chicken pox	11
Diphtheria	2
Impetigo contagiosa	2
Influenza	1
Measles	1
Mumps	3
Pneumonia	3
Scarlet fever	5
Smallpox	3

Reports for Week Ended January 24, 1925

DISTRICT OF COLUMBIA

	Cases
Chicken pox	38
Diphtheria	11
Measles	13
Pneumonia	34
Scarlet fever	37
Smallpox	2
Tuberculosis	21
Typhoid fever	1
Whooping cough	7

NEBRASKA

	Cases
Chicken pox	31
Diphtheria	5
Measles	2
Mumps	1
Pneumonia	2
Scarlet fever	11
Smallpox	15
Typhoid fever	1
Whooping cough	2

NEW MEXICO

	Cases
Chicken pox	24
Diphtheria	2
Influenza	7
Measles	17
Mumps	6
Pneumonia	10
Scarlet fever	13
Tuberculosis	10
Typhoid fever	6
Whooping cough	2

NORTH DAKOTA

	Cases
Chicken pox	45
Diphtheria	5
Mumps	8
Pneumonia	11
Poliomyelitis	1
Scarlet fever	108
Smallpox	9
Tuberculosis	4
Whooping cough	12

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
November, 1924										
California	9	787	78	3	120	3	39	543	383	158
Tennessee	4	122	326	24	28	66	3	168	39	166
December, 1924										
Alabama	7	131	431	95	141	21	1	86	352	75
Iowa		77			46		4	215	219	4
Kansas	4	186	38	0	19	0	2	393	17	9
Mississippi	1	141	4,901	3,061	114	181	5	61	102	141
Montana		92	5		29		8	59	65	9
Oregon	1	168	2		17		6	182	70	11
Pennsylvania	6	1,192			1,917		6	2,633	6	164
South Carolina		217	57			1		8	98	16
South Dakota	1	34			7		4	203	88	8
Virginia	3	344	4,705	73	290	16	4	279	2	48
Washington	0	167	0	0	45	0	26	176	103	41
Wisconsin	4	265	163	0	760	0	8	643	146	20

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

Los Angeles, Calif.—The following items were taken from the report of plague-eradicative measures in Los Angeles, Calif., for the week ended January 17, 1925:

Number of rats examined during week ended Jan. 17, 1925	8, 201
Number of rats found to be plague infected	4
Number of squirrels examined during week ended Jan. 17, 1925	331
Number of squirrels found to be plague infected	0
Total number of rats examined to Jan. 17, 1925	34, 813
Total number of rats found to be plague infected	75
Total number of squirrels examined to Jan. 17, 1925	1, 424
Total number of squirrels found to be plague infected	0
Number of human cases proved plague for week	1

Oakland, Calif.—During the week ended January 17, 1925, two rats were found to be plague infected at Oakland, Calif.

New Orleans, La.—The following items are taken from the report of plague-eradicative measures at New Orleans, La., for the week ended January 17, 1925:

Number of vessels inspected for rat guards	291
Number of inspections made	914
Number of vessels fumigated with cyanide gas	36
Number of rodents examined for plague	4, 260
Number of rodents found positive for plague	7
Total number of rodent plague cases to Jan. 17	12
Total number of rodents examined to Jan. 17	18, 015

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended January 17, 1925, 33 States reported 1,752 cases of diphtheria. For the week ended January 19, 1924, the same States reported 2,423 cases of this disease. One hundred and four cities, situated in all parts of the country and having an aggregate population of nearly 28,800,000, reported 951 cases of diphtheria for the week ended January 17, 1925. Last year, for the corresponding week, they reported 1,442 cases. The estimated expectancy for these cities was 1,269 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Twenty-nine States reported 1,930 cases of measles for the week ended January 17, 1925, and 13,341 cases of this disease for the week ended January 19, 1924. One hundred and four cities reported 781 cases of measles for the week this year, and 5,477 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 33 States—this year, 3,885 cases; last year, 4,199; 104 cities—this year, 1,957, last year, 1,868; estimated expectancy, 1,061 cases.

Smallpox.—For the week ended January 17, 1925, 33 States reported 1,236 cases of smallpox. Last year, for the corresponding

week, they reported 1,192 cases. One hundred and four cities reported smallpox for the week as follows: 1925, 319 cases; 1924, 454 cases; estimated expectancy, 85 cases. These cities reported 27 deaths from smallpox for the week this year, 21 of which occurred at Minneapolis.

Typhoid fever.—Two hundred and seventy-nine cases of typhoid fever were reported for the week ended January 17, 1925, by 32 States. For the corresponding week of 1924 the same States reported 244 cases. One hundred and four cities reported 117 cases of typhoid fever for the week this year, and 77 cases for the week last year. The estimated expectancy for these cities was 56 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 104 cities as follows: 1925, 1,275 deaths; 1924, 1,119 deaths.

City reports for week ended January 17, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	6	2	2	1	0	0	30	2
New Hampshire:									
Concord	22,408	0	1	0	0	0	0	0	1
Nashua	29,234	0	1	0	0	0	16	0	0
Vermont:									
Barre	[1] 10,008	0	0	0	0	0	0	10	0
Massachusetts:									
Boston	770,400	62	68	36	1	3	88	9	27
Fall River	120,912	6	6	4	1	0	0	0	2
Springfield	144,227	1	4	1	3	2	60	7	1
Worcester	191,927	31	6	5	0	0	3	2	4
Rhode Island:									
Pawtucket	68,799	0	2	0	0	0	0	0	1
Providence	242,378	0	13	11	2	2	3	0	7
Connecticut:									
Bridgeport	[1] 143,555	3	9	9	1	2	0	1	4
Hartford	[1] 138,036	12	8	3	0	1	1	6	4
New Haven	172,967	34	4	1	0	1	13	1	10
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	23	26	6	2	0	77	12	18
New York	5,927,625	175	226	232	41	19	34	41	280
Rochester	317,867	9	11	1	0	0	7	35	4
Syracuse	184,511	16	11	4	0	0	4	21	6
New Jersey:									
Camden	124,157	12	5	13	1	1	6	1	6
Newark	438,699	42	23	14	5	0	37	13	20
Trenton	127,390	4	7	1	2	0	18	0	8
Pennsylvania:									
Philadelphia	1,922,788	120	78	84		11	56	37	114
Pittsburgh	613,442	89	27	15		4	70	39	53
Reading	110,917	14	5	1	0	0	2	4	4
Scranton	140,636	6	6	5	0	1	3	1	10

[1] Population Jan. 1, 1920.

City reports for week ended January 17, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	6	14	9	--------	6	3	5	16
Cleveland	888,519	121	37	24	5	1	3	6	20
Columbus	261,082	15	7	2	0	0	1	1	4
Toledo	268,338	23	7	10	0	0	4	0	6
Indiana:									
Fort Wayne	93,573	10	4	0	0	0	2	0	1
Indianapolis	342,718	72	19	5	0	1	0	1	10
South Bend	76,709	5	1	1	0	0	0	0	4
Terre Haute	68,939	8	2	1	0	0	0	0	5
Illinois:									
Chicago	2,886,121	130	141	70	15	5	204	30	86
Cicero	55,968	2	8	1	0	0	2	1	0
Peoria	79,675	10	3	3	0	0	2	2	4
Springfield	61,833	13	2	5	1	1	4	8	0
Michigan:									
Detroit	995,668	79	76	43	2	3	6	7	41
Flint	117,968	8	11	2	1	0	5	0	0
Grand Rapids	145,947	7	5	2	0	1	20	12	1
Wisconsin:									
Madison	42,519	6	1	0	0	--------	1	182	--------
Milwaukee	484,595	63	23	19	1	1	219	70	17
Racine	64,393	12	2	5	1	1	0	15	0
Superior	[1] 39,671	1	1	1	0	0	1	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	16	3	0	0	0	0	0	4
Minneapolis	409,125	71	23	25	0	0	1	8	5
St. Paul	241,891	37	17	17	0	0	1	62	10
Iowa:									
Davenport	61,262	1	1	1	0	--------	0	3	--------
Sioux City	79,862	6	2	1	0	--------	0	1	--------
Waterloo	39,667	2	1	0	0	--------	1	--------	--------
Missouri:									
Kansas City	351,819	10	12	8	1	0	0	8	17
St. Joseph	78,232	3	4	1	0	1	1	0	1
St. Louis	803,853	35	60	57	0	0	1	3	--------
North Dakota:									
Fargo	24,841	10	0	0	0	0	0	10	1
Grand Forks	14,547	4	0	0	0	--------	0	0	--------
South Dakota:									
Aberdeen	15,829	6	--------	1	0	--------	0	2	--------
Sioux Falls	29,206	1	1	2	0	--------	0	0	--------
Nebraska:									
Lincoln	58,761	5	3	6	0	0	2	1	2
Omaha	204,382	8	6	4	0	0	0	1	5
Kansas:									
Topeka	52,555	22	2	4	0	0	0	142	1
Wichita	79,261	11	4	4	0	0	1	1	5
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	--------	3	--------	--------	--------	--------	--------	--------
Maryland:									
Baltimore	773,580	57	38	16	89	9	2	8	56
Cumberland	32,361	--------	1	1	0	0	0	--------	0
Frederick	11,301	--------	1	0	0	0	0	--------	0
District of Columbia:									
Washington	[1] 437,571	37	20	12	4	4	4	--------	15
Virginia:									
Lynchburg	30,277	8	1	1	0	0	0	27	3
Norfolk	159,089	29	4	4	0	0	1	125	5
Richmond	181,044	1	7	8	0	1	2	0	5
Roanoke	55,502	4	2	0	0	0	0	0	1
West Virginia:									
Charleston	45,597	3	2	0	0	0	6	0	0
Huntington	57,918	0	2	2	0	--------	0	0	--------
Wheeling	[1] 56,208	4	2	1	0	0	4	0	6
North Carolina:									
Raleigh	29,171	23	1	0	0	1	0	0	2
Wilmington	35,719	12	1	0	0	0	0	8	0
Winston-Salem	56,230	4	1	4	0	0	0	1	6

[1] Population Jan. 1, 1920.

City reports for week ended January 17, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
SOUTH ATLANTIC—con.									
South Carolina:									
Charleston	71,245	1	2	0	0	1	0	0	4
Columbia	39,688	0	1	0	0	0	0	10	8
Greenville	25,789	0	0	0	0	1	0	0	1
Georgia:									
Atlanta	222,963	3	4	2	1	3	0	1	27
Brunswick	15,937	4	0	0	3	0	0	0	0
Savannah	89,448	0	1	2	0	2	0	2	8
Florida:									
St. Petersburg	24,403	0	0	1	0	0	0	0	0
Tampa	56,050	2	2	0	1	0	1	0	3
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	1	2	1	0	0	1	0	2
Lexington	43,673	4	1	0	0	0	0	1	1
Louisville	257,671	4	8	3	1	0	0	0	6
Tennessee:									
Memphis	170,067	-------	7	1	-------	3	2	-------	9
Nashville	121,128	4	2	1	-------	2	4	0	7
Alabama:									
Birmingham	195,901	8	3	5	10	2	1	1	8
Mobile	63,858	0	1	0	0	1	0	0	1
Montgomery	45,383	3	1	5	1	0	0	2	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	8	1	2	0	-------	0	6	-------
Little Rock	70,916	0	1	1	3	0	4	0	3
Louisiana:									
New Orleans	404,575	6	15	18	12	6	0	0	26
Shreveport	54,590	1	-------	2	0	1	0	0	5
Oklahoma:									
Oklahoma	101,150	3	2	0	0	0	0	1	0
Tulsa	102,018	6	2	4	0	-------	0	-------	-------
Texas:									
Dallas	177,274	23	8	8	0	1	0	0	12
Galveston	46,877	0	2	1	0	0	0	0	4
Houston	154,970	-------	3	7	0	1	0	-------	12
San Antonio	184,727	0	1	3	12	8	1	0	26
MOUNTAIN									
Montana:									
Billings	16,927	10	0	1	0	0	0	5	0
Great Falls	27,787	2	1	3	0	0	24	0	1
Helena	[1] 12,037	-------	0	0	0	0	0	-------	0
Missoula	[1] 12,668	-------	0	2	0	0	0	-------	0
Idaho:									
Boise	22,806	2	1	0	0	0	0	0	0
Colorado:									
Denver	272,031	14	11	4	-------	3	2	60	16
Pueblo	43,519	18	4	4	0	0	1	15	4
New Mexico:									
Albuquerque	16,648	7	0	0	0	1	0	0	3
Arizona:									
Phoenix	33,899	0	-------	0	0	0	0	0	2
Utah:									
Salt Lake City	126,241	53	3	2	0	0	1	22	5
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	60	5	9	0	-------	5	42	-------
Spokane	104,573	15	3	5	0	-------	28	0	-------
Tacoma	101,731	3	3	2	0	-------	0	2	-------
Oregon:									
Portland	273,621	18	7	20	1	0	3	8	7
California:									
Los Angeles	666,853	72	41	36	7	2	16	28	25
Sacramento	69,950	3	2	3	0	0	2	0	4
San Francisco	539,038	38	28	16	6	1	4	33	11

[1] Population Jan. 1, 1920.

City reports for week ended January 17, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	1	0	0	0	0	0	1	3	1	6	21
New Hampshire:											
Concord	0	0	0	0	0	0	0	0	0	0	10
Nashua	2	4	0	0	0	0	0	0	0	1	7
Vermont:											
Barre	1	0	0	0	0	0	0	0	0	0	4
Massachusetts:											
Boston	50	118	0	0	0	13	1	2	1	23	252
Fall River	3	1	0	0	0	2	1	2	0	1	36
Springfield	8	32	0	0	0	0	0	0	0	1	23
Worcester	11	10	0	0	0	3	0	0	0	7	48
Rhode Island:											
Pawtucket	1	2	0	0	0	1	0	0	0	0	20
Providence	9	10	0	0	0	3	0	3	1	1	61
Connecticut:											
Bridgeport	5	17	0	0	0	3	0	0	0	0	50
Hartford	7	10	0	0	0	1	0	0	1	8	42
New Haven	8	26	0	0	0	0	0	0	0	10	49
MIDDLE ATLANTIC											
New York:											
Buffalo	20	22	1	2	0	2	0	0	1	32	129
New York	175	267	0	0	0	[1] 125	11	34	11	91	1,610
Rochester	12	40	0	0	0	2	0	1	1	2	71
Syracuse	15	6	0	0	0	2	1	1	1	0	48
New Jersey:											
Camden	2	15	0	11	1	0	1	1	0	5	33
Newark	20	39	0	0	0	4	1	0	0	61	125
Trenton	3	5	0	0	0	0	1	1	1	6	49
Pennsylvania:											
Philadelphia	55	122	1	6	0	41	3	2	3	78	608
Pittsburgh	24	61	0	0	0	11	2	1	0	8	223
Reading	2	3	0	0	0	5	0	0	0	13	43
Scranton	5	4	0	0	0	2	0	2	0	3	......
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	10	22	1	1	0	10	0	9	1	6	138
Cleveland	36	27	2	0	0	17	2	4	2	20	201
Columbus	8	17	1	5	0	3	0	0	1	4	73
Toledo	16	13	3	0	0	3	1	0	0	17	62
Indiana:											
Fort Wayne	3	10	1	0	0	2	0	1	0	1	26
Indianapolis	10	3	2	20	0	11	1	0	0	10	99
South Bend	4	8	1	1	0	0	0	0	0	0	18
Terre Haute	2	6	0	18	0	3	0	0	0	0	32
Illinois:											
Chicago	105	249	2	0	0	45	3	7	5	127	677
Cicero	1	3	0	0	0	0	0	0	0	7	6
Peoria	6	5	0	0	0	0	0	0	0	8	21
Springfield	2	4	0	0	0	3	0	0	0	2	26
Michigan:											
Detroit	85	110	4	2	1	26	2	7	2	42	253
Flint	9	10	1	0	0	0	1	0	0	4	17
Grand Rapids	8	23	1	0	0	1	0	2	0	11	36
Wisconsin:											
Madison	3	0	0	0	......	......	0	0	......	14	......
Milwaukee	38	10	2	2	2	5	1	1	0	26	97
Racine	6	2	1	4	0	1	0	0	0	1	16
Superior	2	2	2	0	0	0	1	0	0	0	8

[1] Pulmonary tuberculosis only.

City reports for week ended January 17, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL											
Minnesota:											
Duluth	6	26	1	0	0	1	0	2	0	0	22
Minneapolis	32	76	9	44	21	3	1	1	0	0	108
St. Paul	19	36	11	3	1	2	0	0	0	17	59
Iowa:											
Davenport	2	1	2	0	------	------	0	0	------	0	------
Sioux City	3	1	1	0	------	------	0	0	------	0	------
Waterloo	3	2	0	11	------	------	0	0	------	0	------
Missouri:											
Kansas City	13	95	2	0	0	3	0	0	1	1	80
St. Joseph	3	2	0	0	0	0	0	0	0	0	21
St. Louis	29	106	1	12	0	8	2	2	0	5	257
North Dakota:											
Fargo	1	5	1	0	0	1	0	0	0	0	7
Grand Forks	1	0	0	0	------	------	0	0	------	0	------
South Dakota:											
Aberdeen	------	0	------	0	------	------	------	0	------	0	------
Sioux Falls	1	0	1	0	0	0	0	0	0	0	5
Nebraska:											
Lincoln	3	2	0	0	0	2	0	0	0	1	14
Omaha	5	3	2	23	0	0	0	0	0	1	42
Kansas:											
Topeka	2	3	0	0	0	1	0	0	0	4	18
Wichita	3	9	1	0	0	1	0	0	0	10	26
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	------	0	------	------	------	1	------	------	------	------
Maryland:											
Baltimore	34	51	0	0	0	11	2	0	1	49	275
Cumberland	1	1	0	0	0	0	0	0	0	------	15
Frederick	0	0	0	0	0	0	0	0	0	------	3
District of Columbia:											
Washington	20	35	1	7	0	9	2	6	1	11	133
Virginia:											
Lynchburg	0	2	0	0	0	0	0	0	0	2	7
Norfolk	1	2	0	0	0	1	0	0	0	12	------
Richmond	5	7	0	0	0	6	0	0	0	2	72
Roanoke	1	1	0	0	0	1	1	1	0	0	12
West Virginia:											
Charleston	1	1	0	5	0	1	0	0	0	0	8
Huntington	1	0	1	1	------	------	0	0	------	0	------
Wheeling	1	3	0	0	0	2	1	2	0	2	20
North Carolina:											
Raleigh	1	1	0	7	0	2	0	0	0	0	20
Wilmington	1	1	0	3	0	0	0	0	0	2	11
Winston-Salem	2	2	1	4	0	1	0	0	0	5	25
South Carolina:											
Charleston	1	0	0	0	0	3	0	0	1	0	20
Columbia	1	0	0	0	0	1	0	0	0	1	22
Greenville	0	3	0	2	0	0	0	0	0	0	9
Georgia:											
Atlanta	4	1	2	1	0	3	0	0	0	0	99
Brunswick	0	0	1	0	0	0	0	0	0	0	3
Savannah	1	0	0	1	0	1	1	0	0	1	27
Florida:											
St. Petersburg	0	1	1	0	0	1	0	0	0	0	13
Tampa	1	2	0	0	0	2	1	1	0	0	19
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	0	0	0	0	1	0	0	0	0	21
Lexington	1	4	0	0	0	0	0	0	0	0	15
Louisville	5	7	0	0	0	10	1	0	1	2	87
Tennessee:											
Memphis	3	15	1	3	0	3	0	1	0	------	57
Nashville	2	3	1	0	0	8	0	0	0	0	45

City reports for week ended January 17, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
EAST SOUTH CENTRAL—continued											
Alabama:											
Birmingham	4	7	0	35	0	3	1	0	0	1	66
Mobile	1	0	0	0	0	1	1	2	1	0	18
Montgomery	1	0	1	0	0	0	0	0	0	5	18
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	1	0	0	------	------	0	0	------	0	------
Little Rock	2	2	0	0	0	3	0	0	0	0	------
Louisiana:											
New Orleans	3	11	3	0	0	13	2	14	2	3	181
Shreveport	------	1	------	1	1	0	------	0	0	0	30
Oklahoma:											
Oklahoma	3	4	2	0	0	0	1	0	0	2	13
Tulsa	2	2	1	1	------	------	1	0	------	------	------
Texas:											
Dallas	3	6	1	1	0	2	1	0	0	2	61
Galveston	1	0	0	2	0	0	1	1	0	0	16
Houston	1	3	0	3	0	5	0	0	0	------	60
San Antonio	1	1	0	0	0	9	1	0	0	0	84
MOUNTAIN											
Montana:											
Billings	2	20	0	0	0	1	0	0	0	31	7
Great Falls	1	1	2	3	0	1	0	0	0	1	------
Helena	0	0	0	0	0	0	0	0	0	------	2
Missoula	1	1	1	0	0	0	0	0	0	------	2
Idaho:											
Boise	1	14	0	2	0	0	0	0	0	1	6
Colorado:											
Denver	10	14	2	0	0	6	0	0	0	3	73
Pueblo	2	1	0	0	0	0	0	0	0	0	9
New Mexico:											
Albuquerque	1	0	0	0	0	7	0	0	0	0	16
Arizona:											
Phoenix	------	0	------	0	0	13	------	0	0	0	25
Utah:											
Salt Lake City	4	4	3	0	0	0	0	0	0	8	30
Nevada:											
Reno	0	1	0	1	0	0	0	0	0	0	8
PACIFIC											
Washington:											
Seattle	10	5	2	10	------	------	0	0	------	11	------
Spokane	4	1	5	2	------	------	0	0	------	8	------
Tacoma	3	0	2	1	------	------	1	0	------	0	------
Oregon:											
Portland	6	11	4	32	0	3	1	0	0	3	64
California:											
Los Angeles	15	36	2	48	0	36	1	1	0	35	------
Sacramento	2	5	0	9	0	2	0	0	0	0	27
San Francisco	16	16	0	3	0	13	1	1	2	12	180

City reports for week ended January 17, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Dengue		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, est. expectancy	Cases	Deaths
NEW ENGLAND											
Massachusetts:											
Boston	0	3	0	0	3	2	0	0	1	1	0
Worcester	0	0	0	0	1	1	0	0	0	0	0
Rhode Island:											
Providence	0	1	0	0	0	0	0	0	0	0	0
Connecticut:											
New Haven	0	0	0	0	1	0	0	0	0	0	0
MIDDLE ATLANTIC											
New York:											
New York	1	3	0	0	3	5	0	0	1	1	1
Syracuse	0	0	0	0	1	0	0	0	0	0	0
Pennsylvania:											
Philadelphia	0	0	0	0	2	2	0	0	0	0	0
Pittsburgh	0	0	0	0	1	0	0	0	0	0	0
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	0	0	0	0	1	0	0	0	0	0	0
Illinois:											
Chicago	0	0	0	0	1	0	0	0	1	0	0
Michigan:											
Detroit	0	0	0	0	3	1	0	0	0	0	0
Wisconsin:											
Milwaukee	1	0	0	0	0	0	0	0	0	1	0
WEST NORTH CENTRAL											
Missouri:											
Kansas City	1	1	0	0	1	1	0	0	0	0	0
SOUTH ATLANTIC											
Maryland:											
Baltimore	1	0	0	0	1	0	0	0	0	1	0
District of Columbia:											
Washington	1	0	0	0	1	1	0	0	0	0	0
South Carolina:											
Columbia	0	0	0	0	0	0	0	1	0	0	0
Georgia:											
Atlanta	0	0	0	0	0	0	0	2	0	0	0
EAST SOUTH CENTRAL											
Alabama:											
Birmingham	0	0	0	0	1	0	0	0	0	0	0
WEST SOUTH CENTRAL											
Arkansas:											
Little Rock	0	0	0	0	0	0	0	1	0	0	0
Texas:											
San Antonio	0	0	0	2	0	0	0	0	0	0	0
MOUNTAIN											
Colorado:											
Denver	0	0	0	0	0	1	0	0	0	0	0
Utah:											
Salt Lake City	2	0	0	0	0	0	0	0	0	0	0
PACIFIC											
Oregon:											
Portland	1	0	0	0	1	0	0	0	0	0	0
California:											
Los Angeles	0	0	0	0	0	0	1	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended January 17, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, November 9, 1924, to January 17, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17
Total	201	201	175	[2] 190	[3] 193	[4] 197	150	[4] 155	169	[5] 172
New England	204	209	166	258	[3] 208	221	189	258	256	179
Middle Atlantic	158	159	144	170	175	187	149	140	181	188
East North Central	183	168	173	165	167	185	134	151	132	141
West North Central	305	332	307	309	265	299	168	176	143	255
South Atlantic	221	262	260	[6] 173	201	150	134	146	173	[5] 106
East South Central	149	183	120	[7] 98	97	149	51	91	120	91
West South Central	274	209	125	144	209	195	116	148	144	195
Mountain	344	258	162	172	315	248	209	191	239	153
Pacific	273	281	128	252	273	[4] 207	226	[4] 129	194	206

MEASLES CASE RATES

	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17
Total	58	72	66	[2] 112	[3] 128	[4] 143	105	[4] 158	215	[5] 141
New England	102	122	147	164	[3] 282	194	278	380	395	440
Middle Atlantic	68	78	79	105	120	115	235	121	169	157
East North Central	76	97	85	199	207	317	138	294	417	127
West North Central	21	29	10	25	35	19	10	10	19	12
South Atlantic	8	22	14	[6] 22	39	24	35	53	83	[5] 43
East South Central	11	11	0	[7] 0	6	11	0	17	29	46
West South Central	5	5	9	0	0	19	14	9	5	23
Mountain	38	38	29	19	48	57	19	115	134	267
Pacific	67	99	52	136	125	[4] 37	70	[4] 83	194	160

SCARLET FEVER CASE RATES

	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17
Total	198	223	232	[2] 270	[3] 312	[4] 314	244	[4] 297	369	[5] 355
New England	335	385	437	544	[3] 602	552	512	609	661	561
Middle Atlantic	167	185	197	197	260	268	225	286	824	294
East North Central	194	225	228	257	234	311	230	243	383	375
West North Central	456	473	508	616	626	601	468	527	757	755
South Atlantic	118	146	128	[6] 171	252	213	132	203	160	[5] 243
East South Central	80	97	57	[7] 162	109	240	126	172	229	183
West South Central	83	65	93	125	162	185	65	83	148	116
Mountain	191	229	143	296	162	239	191	162	382	534
Pacific	116	174	168	197	218	[4] 134	133	[4] 138	189	183

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Norfolk Va., and Memphis, Tenn., not included in calculating the rate. Reports not received at time of going to press.
[3] Worcester, Mass., not included.
[4] Los Angeles, Calif., not included.
[5] Wilmington, Del., not included.
[6] Norfolk, Va., not included.
[7] Memphis, Tenn., not included.

Summary of weekly reports from cities, November 9, 1924, to January 17, 1925—Annual rates per 100,000 population—Continued

SMALLPOX CASE RATES

	Week ended—									
	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17
Total	35	34	38	[2] 58	[3] 43	[4] 42	41	[4] 40	57	[5] 58
New England	0	0	0	0	[3] 0	0	0	0	0	0
Middle Atlantic	0	3	5	5	1	2	2	3	3	10
East North Central	8	10	14	10	13	14	20	27	40	39
West North Central	207	176	236	417	255	209	205	129	220	193
South Atlantic	14	12	6	[6] 48	39	22	28	39	30	[5] 64
East South Central	69	120	74	[7] 204	177	314	183	372	395	217
West South Central	37	28	32	19	14	51	19	32	65	32
Mountain	67	19	10	10	19	29	48	48	29	57
Pacific	136	142	136	118	113	[4] 106	122	[4] 69	148	212

TYPHOID FEVER CASE RATES

	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17
Total	19	24	29	[2] 45	[3] 43	[4] 56	35	[4] 37	36	[5] 21
New England	12	12	22	30	[3] 16	30	17	25	15	25
Middle Atlantic	17	23	46	71	68	101	57	58	49	21
East North Central	8	11	7	22	32	33	24	28	23	23
West North Central	6	17	4	8	17	15	19	4	6	10
South Atlantic	20	28	30	[6] 56	35	30	37	41	55	[5] 21
East South Central	114	80	109	[7] 63	57	51	34	40	51	17
West South Central	51	60	37	60	51	56	28	37	70	70
Mountain	76	19	19	10	19	10	0	0	10	0
Pacific	17	46	17	29	17	[4] 14	15	[4] 5	26	6

INFLUENZA DEATH RATES

	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17
Total	8	8	10	[2] 12	[3] 17	[4] 16	15	19	21	[5] 22
New England	0	5	5	17	[3] 5	15	15	3	17	27
Middle Atlantic	9	9	8	11	22	17	14	21	20	18
East North Central	3	5	11	9	13	9	16	10	16	15
West North Central	0	0	7	4	4	9	7	9	13	2
South Atlantic	8	12	14	[6] 11	22	22	14	26	35	[5] 47
East South Central	23	11	29	[7] 28	23	23	51	63	46	46
West South Central	36	15	25	31	36	41	15	51	41	87
Mountain	10	38	19	29	29	48	10	38	19	29
Pacific	20	0	8	8	4	[4] 17	12	12	20	12

PNEUMONIA DEATH RATES

	Nov. 15	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17
Total	125	120	130	[2] 153	[3] 159	[4] 172	157	203	192	[5] 215
New England	87	94	144	127	[3] 109	134	114	174	122	157
Middle Atlantic	149	152	152	188	201	191	178	226	228	260
East North Central	86	90	93	115	125	146	126	165	152	152
West North Central	70	79	74	63	88	68	92	101	90	107
South Atlantic	169	116	169	[6] 191	175	248	205	250	246	[5] 294
East South Central	263	206	246	[7] 211	217	297	206	303	292	189
West South Central	173	102	107	163	178	163	229	341	260	449
Mountain	95	143	124	210	200	276	219	229	229	248
Pacific	106	86	94	168	135	[4] 86	147	188	184	163

[2] Norfolk, Va., and Memphis, Tenn., not included in calculating the rate. Reports not received at time of going to press.
[3] Worcester, Mass., not included.
[4] Los Angeles, Calif., not included
[5] Wilmington, Del., not included.
[6] Norfolk, Va., not included.
[7] Memphis, Tenn., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

FINLAND

Communicable diseases—December 1-15, 1924.—During the period December 1 to 15, 1924, three cases of lethargic encephalitis, one case of poliomyelitis, 29 cases of typhoid fever, and 43 cases of paratyphoid fever were reported in Finland. Population, 3,402,593.

INDO-CHINA

Cholera—Plague—Smallpox—September, 1924.—During the month of September, 1924, cholera, plague, and smallpox were reported in Indo-China, as follows: *Cholera*—cases, 7 (European, 1); deaths, 4; corresponding period, 1923—cases, 9 (European, 1); deaths, 4. *Plague*—cases, 12; deaths, 12; corresponding period, 1923—cases, 14; deaths, 14. *Smallpox*—cases, 78; deaths, 22; corresponding period, 1923—cases, 213; (European, 1); deaths, 75 (European, 1).

Influenza.—During the same period, 28 cases of influenza with five deaths were reported in Indo-China.

LATVIA

Smallpox—Typhoid fever—Typhus fever—November, 1924.—During the month of November, 1924, two cases of smallpox, 121 cases of typhoid fever, and 11 cases of typhus fever were reported in the Republic of Latvia. Population, 2,000,000.

MEXICO

Outbreak of smallpox, Monterey.—Under date of January 24, 1925, an outbreak of smallpox was reported at Monterey, Mexico.

SYRIA

Measles—Smallpox—Aleppo.—Under date of January 3, 1925, 500 cases of measles and 50 cases of smallpox were estimated as existing in the city of Aleppo, Syria. Population, estimated, 300,000.

UNION OF SOUTH AFRICA

Plague—Cape Province—Orange Free State—Transvaal—Rodent mortality.—During the week ended December 13, 1924, plague was reported in the Union of South Africa as follows: Cape Province—Kimberly, in municipal location No. 2, one fatal case; at Dronfield, eight miles distant from the town, one case. The occurrence was in

natives and was bubonic in type. Evidence of mortality among wild rodents was stated to have been found on the outskirts of the town and also at Modder River and Merton Siding. Maraisburg, district, two cases, native, mother and child, bubonic in type and stated to have been immediate contacts of two fatal cases reported during the week ended November 29, 1924. Orange Free State—Hoopstad, one case, native, on farm, bubonic; Vredevort, one case, fatal, on farm, native, bubonic. Transvaal—Boshof, on farm, one case, fatal, bubonic.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended February 6, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Indo-China				Sept. 1-30, 1924: Cases, 7; deaths, 4; corresponding period, 1923—cases, 9; (European 1); deaths, 4.
Province—				
Cambodia	Sept. 1-30	4	3	
Cochin-China	do	3	1	
Saigon	Nov. 30-Dec. 6	1		

PLAGUE

Place	Date	Cases	Deaths	Remarks
Indo-China				Sept 1-30, 1924 Cases, 12; deaths, 12, corresponding period, 1923—cases, 14; deaths, 14.
Province—				
Anam	Sept. 1-30	2	2	
Cambodia	do	9	9	
Cochin-China	do	1	1	
Union of South Africa:				
Cape Province—				
Dronfield	Dec. 7-13	1		8 miles from Kimberley.
Kimberley	do	1	1	
Maraisburg District	do	2		Immediate contacts of previously reported cases.
Orange Free State—				
Hoopstad	do	1		On farm.
Vredevort	do	1	1	Do.
Transvaal—				
Boshof	do	1	1	Do.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Brazil:				
Pernambuco	Nov. 23-Dec. 6	11	5	
Canada:				
British Columbia—				
Vancouver	Jan. 11-17	16		
Manitoba—				
Winnipeg	Jan. 18-24	7		
Great Britain:				
England and Wales	Jan. 4-10	91		
Indo-China				Sept. 1-30, 1924; Cases, 78; deaths, 22; corresponding period, 1923: Cases, 218 (European, 1); deaths, 75 (European, 1).
Province—				
Anam	Sept. 1-30	8	2	
Cambodia	do	16	1	
Cochin-China	do	43	19	
Saigon	Nov. 23-29	2	1	Including vicinity.
Tonkin	Sept. 1-30	11		

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received During Week Ended February 6, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Latvia				Nov. 1-30, 1924: Cases, 2.
Mexico:				
Mexico City	Dec. 21-27	1		Including municipalities in Federal district.
Monterey				Jan. 24, 1925: Outbreak.
Salina Cruz	Dec. 1-31	1	1	
Tampico	Jan. 1-10	9	3	
Vera Cruz	Jan. 12-18		6	
Peru:				
Arequipa	Nov. 24-30		1	
Spain:				
Barcelona	Dec. 25-31		1	
Malaga	Jan. 4-10		21	
Syria:				
Aleppo				Jan. 3, 1925: 50 cases present.
Tunis:				
Tunis	Jan. 1-7	14	17	

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Dec. 1-31	4	1	
Latvia				Nov. 1-30, 1924. Cases, 11.
Mexico:				
Mexico City	Dec. 21-27	5		Including municipalities in Federal district.
Do	Dec. 28-Jan. 3	10		Do.
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Oct. 19-25, 1924: Cases, 33; deaths, 1.
Union of South Africa:				
Orange Free State	Dec. 7-13			Outbreaks.

Reports Received from December 27, 1924, to January 30, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo	Nov. 16-22	1		
India				Oct. 19-Nov. 22, 1924: Cases, 12,221; deaths, 7,317.
Bombay	Nov. 23-29	1	1	
Calcutta	Oct. 26-Dec. 13	49	41	
Madras	Nov. 16-Dec. 13	43	28	
Rangoon	Nov. 9-29	5	2	
Indo-China				Aug. 1-31, 1924: Cases, 7; deaths, 6. August, 1923: Cases, 13; deaths, 10 native and 1 fatal case European.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	do	2	2	
Cochin-China	do	4	3	
Siam:				
Bangkok	Nov. 9-29	4	2	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 16-Dec. 29	11	1	
Ponta Delgada	Dec. 6-12	9	5	
British East Africa:				
Kenya—				
Uganda	Aug. 1-31	79	62	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to January 30, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Canary Islands:				
Las Palmas				Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec. 26	3	1	Vicinity of Santa Cruz de Teneriffe.
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9–Dec. 13	7	7	
China:				
Nanking	Nov. 23–Dec. 6			Present.
Ecuador:				
Guayaquil	Nov. 16–Dec. 15	8	3	Rats taken, 17,677; found infected, 33.
Egypt				Jan. 1–Dec. 9, 1924: Cases, 365. Corresponding period, year 1923—cases, 1,462.
City—				
Alexandria	Dec. 3–9	1	1	Bubonic.
Port Said	do	2	1	
Suez	do	1	1	
Hawaii:				
Honokaa	Nov. 4	1		At Mill Camp, location of Honokaa Sugar Co. Plague-infected rodent found, Dec. 9, 1924, in vicinity of Honokaa village.
India				Oct. 19–Nov. 22, 1924: Cases, 11,803; deaths, 8,700.
Bombay	Nov. 22–29	1	1	
Karachi	Nov. 30–Dec. 6	2	1	
Madras (Presidency)	Nov. 23–Dec. 6	182	128	
Rangoon	Oct. 26–Dec. 6	13	13	
Indo-China				Aug. 1-31, 1924: Cases, 13; deaths, 8 Corresponding period, 1923: Cases, 23; deaths, 21.
Province—				
Anam	Aug. 1–31	2	2	
Cambodia	do	9	6	
Cochin-China	do	2		
Java:				
East Java—				
Blitar	Nov. 11–22			Province of Kediri; epidemic.
Pare	Nov. 29			Do.
Cheribon District	Oct. 14–Nov. 3		14	
Pekalongan District	do		29	
Soerabaya District—				
Soerabaya	Nov. 16–22	6	4	
Tegal	Oct. 14–20		3	
Madagascar				Oct. 16–Nov. 15, 1924: Cases, 83; deaths, 75.
Tananarive Province—				
Tananarive Town	Oct. 16–Nov. 15	6	5	
Other localities	do	77	70	Bubonic, pneumonic, septicemic.
Straits Settlements:				
Singapore	Nov. 9–15	1	1	
Union of South Africa:				
Cape Province—				
De Aar	Nov. 22–29	1		Native.
Maraisburg District	do	2	2	Bubonic. Native children, on Goedshoop Farm.
Orange Free State—				
Kroonstad	do	1		Bubonic; mild; from Grandstable Farm, Hoopstad district.
Transvaal—				
Wolmaransstad District.	do	1	1	On Farm Wolvespruit, Vaal River. Native.
On vessel:				
S. S. Conde				At Marseille, France, Nov 6, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.

SMALLPOX

Bolivia:				
La Paz	Nov. 1–30	12	7	
Brazil:				
Pernambuco	Nov. 9–22	26	6	
British South Africa:				
Northern Rhodesia	Oct. 28–Nov. 24	43	2	In natives.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to January 30, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Canada:				
British Columbia—				
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-10	19		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-17	11		
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33.
China:				
Amoy	Nov. 9-Dec. 13			Present.
Antung	Nov. 17-22	1		
Foochow	Nov. 2-Dec. 13			Do.
Hongkong	Nov. 9-Dec. 6	5	1	
Shanghai	Dec. 7-27	1	2	
Czechoslovakia				April-June, 1924: Case, 1, occurring in Province of Moravia.
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 23	9		
Gibraltar	Dec. 8-14	1		
Great Britain:				
England and Wales	Nov. 23-Jan. 3	472		
India				Oct 19-Nov 22, 1924: Cases, 4,026; deaths, 883.
Bombay	Nov 2-29	8	6	
Calcutta	Oct 26-Dec. 13	150	82	
Karachi	Nov. 16-Dec. 20	12	1	
Madras	Nov 16-Dec. 13	49	20	
Rangoon	Oct. 26-Dec. 6	41	12	
Indo-China				Aug. 1-31, 1924. Cases, 154; deaths, 54
Province—				
Anam	Aug. 1-31	41	9	August, 1923. Cases, 177 (European, 20), deaths, 31 (European, 1)
Cambodia	do	24	8	
Cochin-China	do	72	30	
Saigon	Nov. 16-22	1	1	Including 100 sq. km. of surrounding country.
Tonkin	Aug. 1-31	8	7	
Iraq:				
Bagdad	Nov. 9-15	1	1	
Jamaica				Nov. 30-Dec 27, 1924: Cases, 33. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim.
Java:				
East Java—				
Soerabaya	Oct. 19-Nov. 29	484	159	
Province—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov. 14	2		
Cheribon	Oct. 14-Nov. 3	14		
Pasoeroean	Nov. 12-19			Epidemic in two native villages.
Do	Oct. 26-Nov. 1	9	1	
Pekalongan	Oct. 14-Nov. 3	20		
Latvia				Oct. 1-31, 1924: Cases, 3.
Mexico:				
Durango	Dec. 1-31		5	
Guadalajara	Dec. 2-29		1	
Do	Jan. 6-12		1	
Mexico City	Nov. 23-Dec. 20	4		
Tampico	Dec. 11-31	5	4	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan. 5-11		3	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Portugal:				
Lisbon	Dec. 7-20	19		
Oporto	Nov. 30-Dec. 27	3	2	
Russia				Jan. 1-June 30, 1924: Cases, 9,683.
Spain:				
Barcelona	Nov. 27-Dec. 10		4	
Cadiz	Nov. 1-30		34	
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan. 3		97	
Valencia	Nov. 30-Dec. 6	2		
Switzerland:				
Lucerne	Nov. 1-30	9		
Syria:				
Aleppo	Nov. 23-29	1		
Do	Dec. 21-27	12		

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to January 30, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Tunis:				
Tunis	Nov. 25-Dec. 29	42	35	
Turkey:				
Constantinople	Dec. 13-19	5		
Union of South Africa:				
Cape Province	Nov. 9-29			Outbreaks.
Orange Free State	Nov. 2-8			Do.
Transvaal	Nov. 9-15			Do.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Nov. 1-Dec. 10	1		
Bolivia:				
La Paz	do	2		
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Iquique	Nov. 30-Dec. 1		2	
Talcahuano	Nov. 16-Dec. 20		5	
Valparaiso	Nov. 25-Dec. 7		4	
Czechoslovakia				Apr.-June, 1924: Cases 3, occurring in Province of Russinia.
Egypt:				
Alexandria	Dec. 3-9	1	1	
Cairo	Oct. 1-Nov. 11	9	7	
Latvia				Oct. 1-31, 1924: Cases, 5.
Mexico:				
Durango	Dec. 1-31		1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Dec. 20	65		
Palestine				Nov. 12-Dec. 8, 1924: Cases, 7.
Poland				Sept. 28-Oct. 18, 1924: Cases, 80; deaths, 4.
Rumania:				
Constanza	Dec. 1-10	1		
Russia				Jan. 1-June 30, 1924: Cases, 92,000.
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Turkey:				
Constantinople	Nov. 15-Dec. 19	6	1	
Union of South Africa:				
Cape Province	Nov. 9-29			Outbreaks.
East London	Nov. 16-22	1		
Orange Free State	Nov. 9-29			Do.
Transvaal	Nov. 9-15			Do.
Yugoslavia:				
Belgrade	Nov. 24-Dec. 7	4		

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TREASURY DEPARTMENT

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SPECIAL ARTICLES

Study of Morbidity in a General Population Group
Dust Inhalation and Industrial Tuberculosis

WASHINGTON
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UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

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PUBLIC HEALTH REPORTS

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THE INCIDENCE OF ILLNESS IN A GENERAL POPULATION GROUP

General Results of a Morbidity Study from December 1, 1921, Through March 31, 1924, in Hagerstown, Md.[1]

By EDGAR SYDENSTRICKER, Statistician, United States Public Health Service

The problems and aims of public health are still set forth almost entirely in lethal terms whenever statistics are used. We speak of an unfavorable death rate and measure success in a lowered mortality. The best indices which have been available of the prevalence of nearly all diseases are the fatal cases only; and our epidemiology is limited, for the most part, to statistics of deaths.

The reasons for this condition are fairly clear to every vital statistician and will not be discussed here. Of greater pertinence is the result of a prolonged dependence upon mortality statistics. The effect has been to foster a fallacious premise for public health work, namely, that a low death rate indicates the presence of health. Obviously it does not. We know that, on the contrary, an exceedingly unhealthful region may exhibit a relatively low mortality, as, for example, a heavily infested hookworm locality or a section abounding in malaria. Pellagra may be widely prevalent in a community without affecting perceptibly its general death rate or even increasing materially the number of deaths from the disease itself. Instances of the same sort could be multiplied. The ill health that is manifested in symptoms, in discomfort, in lessened vigor and efficiency, even in illness and suffering, is not reflected in the death rate, except for certain diseases, for any purpose practicable in preventive work.

What really matters more to the sanitarian, therefore, in his scientific searching for causes and conditions and in his preventive work is not deaths but *ill health*. Of far greater importance to him than the life table or the list of causes of death is a view of the health situation as depicted by records of the occurrence of *sickness* and its causes. If such a view were permitted him, it will hardly be denied that the change in his perspective would lead him to modify considerably his scheme for research and his program of effort.

Such a view of the health—as contrasted with the death—situation is not an impossible dream. While their significance may not yet be

[1] From the Statistical Office, United States Public Health Service.

fully recognized, a succession of serious attempts has recently been made to collect records of disease incidence and prevalence in addition to and wholly apart from the notification of communicable diseases for administrative purposes. Within the natural limitations of the methods employed these efforts have been rewarded with considerable success. Continuous sickness records for industrial employees, school children, and other groups are yielding a knowledge of the incidence of certain diseases that hitherto had not been possible from mortality statistics or from statistics of notifiable diseases. Sickness surveys have made a similar contribution to the knowledge of disease prevalence. Physical examinations of many groups, some of them on a large scale, have revealed conditions before not recognized nor even imagined. These beginnings in morbidity data already have done more than bring to light conditions previously not adequately known; they have given glimpses of what the sanitarian has long wanted to see—a picture of the public-health situation as a whole, drawn in proper perspective and painted in true colors.

In the hope of contributing to this knowledge, and as a part of its morbidity statistics studies, the Statistical Office of the United States Public Health Service undertook a series of repeated observations upon the incidence of illness in a general population group in Hagerstown, Md. This work was begun in the autumn of 1921 and was continued for a period of nearly two and a half years, a record of illnesses according to cause having been secured for a population of between 8,000 and 9,000 persons. In the present communication it is purposed to give only a brief summary of the results from the point of view suggested in the foregoing paragraphs. The figures here given are provisional, since they are the results of a preliminary tabulation. In later papers it is planned to present the final results in greater detail, as well as certain epidemiological analyses in studies of specific diseases.

METHOD OF OBSERVATION

The population actually observed for the entire period included about 1,600 families, composed of about 7,200 *white* persons of all ages and both sexes, living under conditions that in no remarkable way were unusual. The family was the unit for observation, and, so far as possible, all members actually resident in each family were under observation. Since the same families were observed throughout the period, the data approximate a continuous record for 28 months, including nearly three winter and two summer seasons.

A more extended discussion of the method of the study will appear in a later paper, but a brief description is as follows:

(1) A preliminary house-to-house survey was made by members of the staff of the Statistical Office in November, 1921, in several sections

of Hagerstown, in the course of which the population of these sections was enumerated and records were made (*a*) for each individual relating to color, sex, and age, past occurrence of certain contagious diseases and present acute or chronic disease or ailment, and (*b*) for each household relating to its general economic status, sanitary condition, method of excreta disposal, and water and milk supplies.

(2) This survey was followed by a series of 16 canvasses, each household being visited by a trained field assistant at intervals of from six to eight weeks. At each visit a history of the incidence of sickness in the family since the preceding visit, with a statement of the date of onset, duration, extent of disabling effects, and attendance of physician, was obtained from a relatively responsible informant, usually the housewife.

(3) In addition, other sources of information were regularly and systematically utilized in obtaining the record of disease prevalence as follows: (*a*) Weekly records of absence from school, specifying the nature of the illness whenever illness was the cause so far as the teacher could ascertain it; (*b*) reports of all cases treated in the various clinics maintained in conjunction with the Washington County Health Demonstration, all of the clinics being participated in by local physicians; (*c*) reports of notifiable diseases from practicing physicians; (*d*) reports of district nurses; (*e*) data collected in field investigations of child hygiene by the United States Public Health Service in cooperation with the Washington County Health Demonstration; (*f*) physicians' diagnoses, the statements of the diagnoses of all cases attended by physicians being submitted to the physicians concerned for their review and correction.

We were able to obtain a reasonably accurate record of the persons actually under observation (i. e., "population" or "exposure") since a record was kept of each individual's "absence from observation," whether this was actual absence from the locality or a period for which records of his sicknesses were not available. The cooperation given by the families was very satisfactory and very gratifying. Since these families resided in several sections of the city and composed about one-fourth of its total white population, it is believed that they constituted a fair representation of the groups which appeared to differ with respect to economic status and sanitary environment.

The result of these canvasses is not, of course, a complete record of *all* of the ill-health prevalent in this population during the period of observation nor even an accurate statement of the causes of all the attacks of disease which were recorded. Such a record was impracticable for so large a population of this kind, and no false hopes of obtaining it were indulged in. The chief aim of the investigation was a record of *illnesses* from such causes as might occur in a population group that in no remarkable respect was unusual or unrepresentative of the general population living in towns or small cities.

From previous experience in sickness surveys, continuous morbidity records and disability records of industrial employees, we were led to believe that the intervals between visits chosen for the present study would probably yield a fairly accurate record of real illnesses. The length of interval between inquiries obviously is an important determinant of how much sickness will be recorded: a weekly inquiry will elicit information on more slight ailments than a monthly inquiry, and an inquiry made every six or eight weeks will fail to obtain information on many ailments of very short duration or of several days' duration but accompanied by slight discomfort. Accordingly, less than 4 per cent of the illnesses of exactly stated durations recorded in our study were one day or less in duration. Nearly 80 per cent were three days or longer, and 60 per cent were eight days or longer in duration. Approximately 40 per cent were not only disabling but caused confinement to bed. It is evident, therefore, that in the main the illnesses recorded were more than trivial in their character, in spite of the fact that in some instances mere symptoms were given as diagnoses. The incidence of acute attacks of specific and generally recognizable diseases has been, we feel, recorded with a satisfactory degree of completeness; on the other hand, the incidence of mild attacks, as, for example, of coryza, and of slight disorders and even of serious conditions when such conditions were not accompanied by noticeable symptoms, is probably incomplete and in many instances inaccurate in spite of the fact that a record of 28 months was obtained for the same individuals. Cases attended by physicians may be said to be quite complete.[1]

[1] A fairly accurate check on the completeness of the records obtained is afforded by the records of absences from school on account of sickness. Through the excellent cooperation of the Hagerstown school administration and teachers, every absence with notation as to cause was recorded. The records of absences due to sickness were classified according to days lost from school and a similar tabulation was made for the records obtained in the house-to-house canvasses, the same period being used. The results were as follows:

Comparison of results of school sickness records with records obtained in repeated house-to-house canvasses in Hagerstown, Md., for a 10 months' period

Days lost from school on account of sickness	Rate per 1,000 children enrolled: Children enrolled in city schools (1)	Rate per 1,000 children enrolled: Children in families canvassed (2)	Ratio of (2) to (1)
One day or more	1,730	877	51
Two days or more	1,033	747	72
Three days or more	647	646	100
Four days or more	451	501	111
Five days or more	346	380	110
Six days or more	232	260	112

It is evident that the two sets of records are fairly comparable so far as sicknesses involving absence from school for more than two days are concerned. The short illnesses were frequently missed by the particular house-to-house method used, apparently only about one-fifth of the one-day absences and one-fourth of the two-day absences being recorded; at the same time the well-known tendency for brief absences for other reasons to be credited to sickness in school records must be taken into account. The results of the two methods checked remarkably well for absences of three days or longer due to various specific causes with the exception of "headaches," which appeared more frequently in the school reports.

Taking into consideration age and sex, the results of the repeated canvasses also compared favorably with our records of industrial employees disabled on account of sickness for periods lasting three days or longer.

It should be kept in mind, of course, that the results of this study are not comparable, except in certain details, with the results of previous canvasses and surveys. This point will be discussed in more detail in a later report.

SUMMARY OF RESULTS

In all, 19,054 illnesses as described above were recorded during the 28 months' period, December 1, 1921–March 31, 1924. Since 16,840 "years of exposure" [1] were recorded, an annual rate is shown of 1,131.5 per 1,000 population.

During the same period the annual death rate for the entire white population of Hagerstown, exclusive of nonresidents, was 10.6 per 1,000.

Upon the assumption that the illness rate of 1,132 per 1,000 prevailed in the entire population of the city, an incidence of slightly more than 100 cases of illness for each death is indicated.

The occurrence of mild epidemics of influenza in 1922 and 1923 must, of course, be taken into account in estimating a morbidity rate which is not affected by unusual conditions. If we subtract from our recorded illnesses the cases of influenza which occurred in definite epidemics during the 28 months' period, as well as allow for the fact that almost three winters were included in our period, the annual morbidity (illness) rate would probably be somewhere between 800 and 900 per 1,000 persons of all ages and both sexes.

To show at a glance the general character of the morbidity recorded, the cases of illness have been classified into 10 broad groups arranged roughly in accordance with the International List of Causes of Death:

TABLE 1.—*Morbidity from 10 groups of causes in a population group of 7,200 white persons of Hagerstown, Md., December 1, 1921–March 31, 1924*

[Numbers in parentheses refer to those given in International List of Causes of Death, 1920]

Cause	Annual rate per 1,000 persons observed
All causes	1,131.5
Respiratory diseases and disorders (11; 31; 97–107; 109)	668.6
General diseases (1–10; 12–30; 32–69; 158) [a]	124.1
Diseases and disorders of the digestive system (108; 110–127)	117.2
Diseases and disorders of the nervous system (70–84) [b]	46.8
Nonvenereal diseases of the genito-urinary system and annexa (135–150)	36.8
Diseases and disorders of the circulatory system and kidneys and annexa (87–96; 128–134)	35.9
Accidents and other external causes (175–203) [c]	34.8
Skin diseases and disorders (151–154)	22.8
Diseases and disorders of eyes and ears (85–86)	20.8
All other causes (155–157; 159–174; 204–205) [d]	16.6

[a] See Table 2.
[b] Includes "Headaches without other symptoms" (No. 205).
[c] "Fatigue" is not included (No. 192).
[d] Includes fatigue (No. 192).

[1] A "year of exposure" being the equivalent of one person observed for a year.

The incidence of respiratory diseases and disorders is so great that it at once challenges attention. Their relatively high frequency as causes of disabling sickness among wage-earners has already been pointed out in previous publications of the Statistical Office (1), but their preponderance among the causes of illness in the general population had not been so definitely shown until the present study was made.[1] The fact is even more striking when it is recalled that our data are far from being complete records of the incidence of the minor respiratory ailments of short duration. The school records obtained in Hagerstown showed that the incidence of "colds," aside from more definitely described respiratory affections, was 744 per 1,000 children for 180 school days, and that the mean duration in days of absences from school because of "colds" was 2.5 (2). A preliminary report on a study of minor respiratory diseases now in progress has revealed that during a five and one-half months' period (October 15, 1923–March 31, 1924) 90 per cent of a typical group of college students suffered from one or more attacks, and that the incidence rate was 1900 per 1,000 for this period (3).

The chronological picture shown in Figure 1 indicates an extraordinary variation in the weekly incidence of cases of illnesses. The seasonal as well as shorter variations were so great in respiratory diseases that the group of illnesses due to these causes determined largely the variation in total illness. The sharp peaks in March, 1922, and February, 1923, were caused by epidemics of "colds" and influenza and grippe, but the January, 1924, peak included but few cases of influenza and grippe. While little evidence of seasonal variation appeared for nonrespiratory diseases, considered as a group, an apparently higher incidence occurred during the greater part of 1923 than in the remainder of the period.

The relative *un*importance of the "general" diseases is clearly shown when we compare their incidence to that of all illnesses and especially of respiratory illnesses. This group of "general" diseases consists chiefly of the "common" diseases of childhood, as shown in Table 2.

TABLE 2.—*Morbidity from certain "general" diseases in a population group of 7,200 white persons of Hagerstown, Md., December 1, 1921–March 31, 1924*

[Numbers in parentheses refer to those given in International List of Causes of Death, 1920]

Disease	Number of illnesses	Annual rate per 1,000
Measles (7)	635	37.7
Scarlet fever (8)	35	2.1
Whooping cough (9)	377	22.4
Diphtheria (10)	42	2.5
Croup (10)	67	4.0
Chicken pox (25a)	253	15.0
Rheumatism, myalgia, lumbago (51–52; 158)	375	22.3
Other "General" diseases (1–6; 12–24; 25b; 25c; 26–30; 32–50; 53–60)	306	18.2

[1] The *prevalence* of respiratory diseases as indicated by various sickness surveys does not, of course, show the frequency of the occurrence (i. e., the *incidence*) of such diseases, for the reason that the "survey" is a cross-section, as it were, of the disease situation as it exists at a given instant in time. The shorter the duration of the attack of the disease in question the less adequate is the "cross-section" method as a measure of *incidence*.

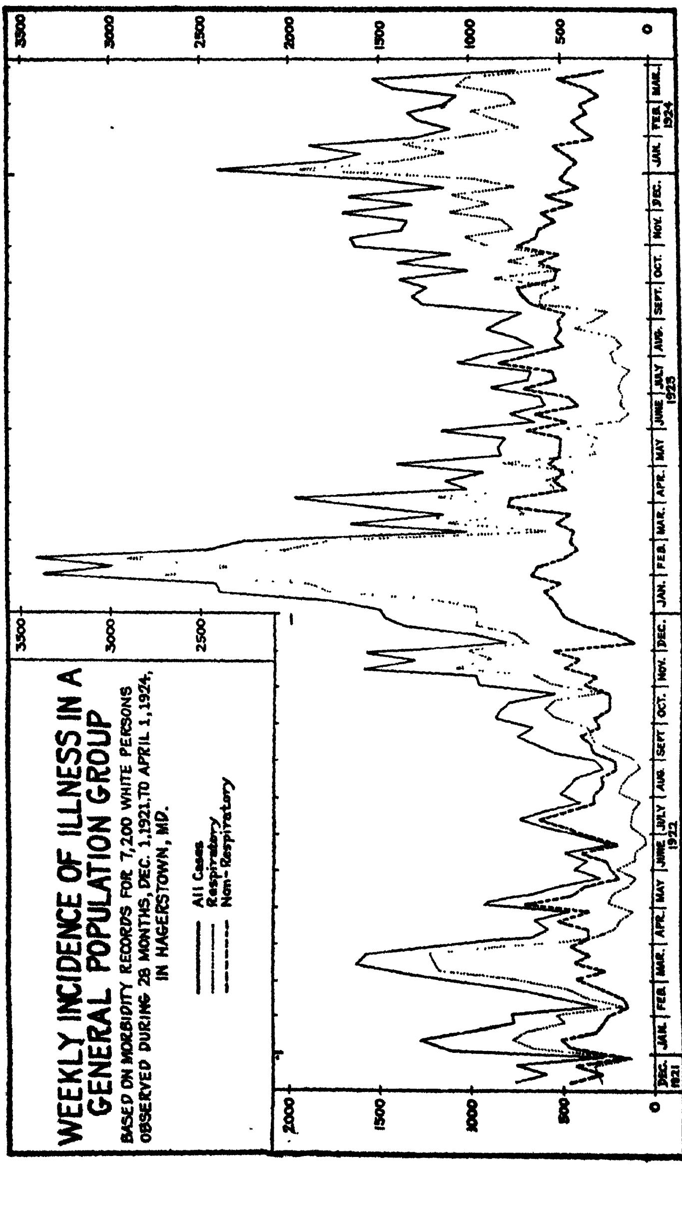

WEEKLY INCIDENCE OF ILLNESS IN A GENERAL POPULATION GROUP
BASED ON MORBIDITY RECORDS FOR 7,200 WHITE PERSONS OBSERVED DURING 28 MONTHS, DEC. 1,1921, TO APRIL 1,1924, IN HAGERSTOWN, MD.
All Cases
Respiratory
Non-Respiratory
0
500
1000
1500
2000
2500
3000
3500
DEC. 1921
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY 1922
AUG.
SEPT.
OCT.
NOV.
DEC.
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY 1923
AUG.
SEPT.
OCT.
NOV.
DEC.
JAN.
FEB. 1924
MAR.

FIG. 1

MORBIDITY AND MORTALITY COMPARED

A comparison of the 10 general groups of causes of morbidity and of mortality will emphasize the significance of the observation with which this report was introduced. A striking contrast in the pictures shown by sickness and death records is apparent:

TABLE 3.—*Morbidity and mortality in Hagerstown, Md., based on morbidity records for 7,200 white persons of all ages, and mortality among the total white population of Hagerstown, Md., during 28 months, December 1, 1921–March 31, 1924*

[Numbers in parentheses refer to those given in International List of Causes of Death, 1920]

Cause	Annual rate per 1,000		Per cent	
	Morbidity	Mortality	Morbidity	Mortality
All causes	1,131.5	10.6	100.0	100.0
Respiratory diseases and disorders (11; 31; 97–107; 109)	668.6	2.1	59.7	19.6
General diseases (1–10, 12–30; 32–69; 158) [1]	124.1	1.4	11.0	13.2
Diseases and disorders of the digestive system (108, 110–127)	117.2	.6	10.4	5.7
Diseases and disorders of the nervous system (70–84) [2]	46.8	1.2	4.1	11.2
Nonvenereal diseases of the genito-urinary system and annexa (135–150)	36.8	.3	3.3	2.4
Diseases and disorders of the circulatory system and kidneys and annexa (87–96; 128–134)	35.9	3.7	3.2	34.7
Accidents and other external causes (175–203) [3]	34.8	.5	3.1	5.1
Skin diseases and disorders (151–154)	22.8	(4)	2.0	.3
Diseases and disorders of eyes and ears (85–86)	20.8	(4)	1.8	.4
All other causes (155–157; 159–174; 204–205) [5]	16.6	.8	1.5	7.4

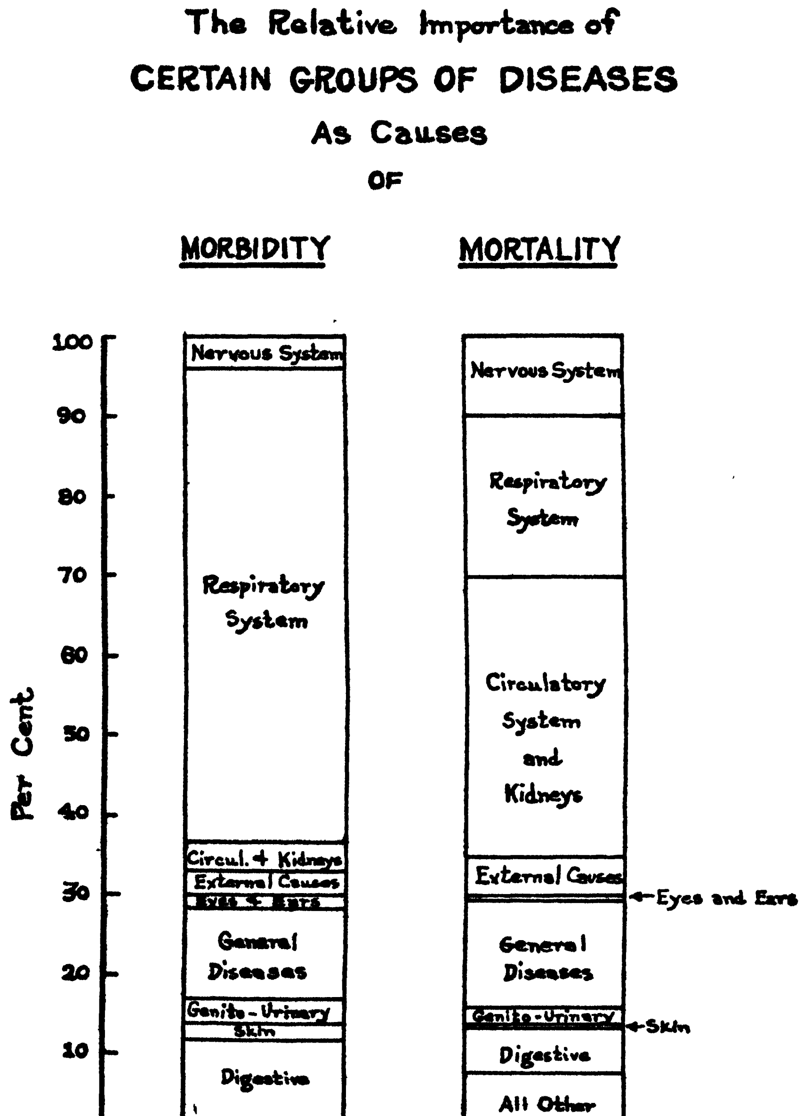
[1] See Table 2.
[2] Includes "headaches without other symptoms" (No. 206).
[3] "Fatigue" is not included (No. 192).
[4] Less than one-tenth of 1 per 1,000.
[5] Includes fatigue (No. 192).

The relative importance of each of the 10 groups of diseases as causes of morbidity and mortality is indicated by the percentages in Table 3 and is graphically portrayed in the accompanying diagram (Fig. 2).

Further comment of a general nature is hardly necessary. The diseases that cause illness most frequently are respiratory (chiefly "colds" influenza, bronchitis, and tonsillitis), digestive disorders, and the "general diseases" (chiefly communicable diseases of childhood). The principal diseases which cause death are those which result in the breakdown of the circulatory system, the kidneys, the lungs, and the nervous system, and the malignant "general diseases," such as cancer. The difference in the two pictures may be shown in another way by estimating from the two sets of data the number of illnesses for each death, as in Figure 3.

Finally, we may compare the age curve for illness with the age curve for mortality. The graphs shown in Figure 4 have been placed on a common base (the rate for all ages); their variations only are comparable.[1] From this point of view the most important general

[1] The data used in Figure 4 are for 13 months instead of 28 months, the tabulations by age not having been completed for the entire period. The number of illnesses is sufficient to indicate the characteristic curve for illnesses of the degree of severity included in this study.



Based on morbidity records for 7,200 white persons of all ages, and mortality among the total white population of Hagerstown, Md., during 28 months, December 1, 1921–March 31, 1924. See Table 1.

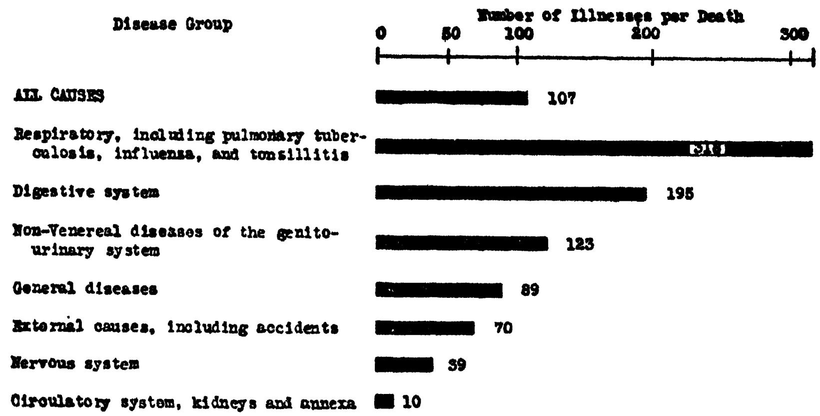
FIG. 2

contrast is in the character of the curves: the mortality curve exhibits the usual high points at the age of infancy and at old age and the, relatively, very low level in childhood and at early adult ages; the morbidity curve, on the other hand, shows no variations of such magnitude.[2] In other words, disease kills chiefly at two periods of life—in infancy and toward the end of the "natural span"—whereas disease, with far less discrimination, causes discomfort, suffering, illness, and disability at every age.

RATIO OF MORBIDITY TO MORTALITY

For

CERTAIN GROUPS OF DISEASES



Based on morbidity records for 7,200 white persons of all ages, and mortality among the total white population of Hagerstown, Md., during 28 months, December 1, 1921–March 31, 1924. See Table 1.

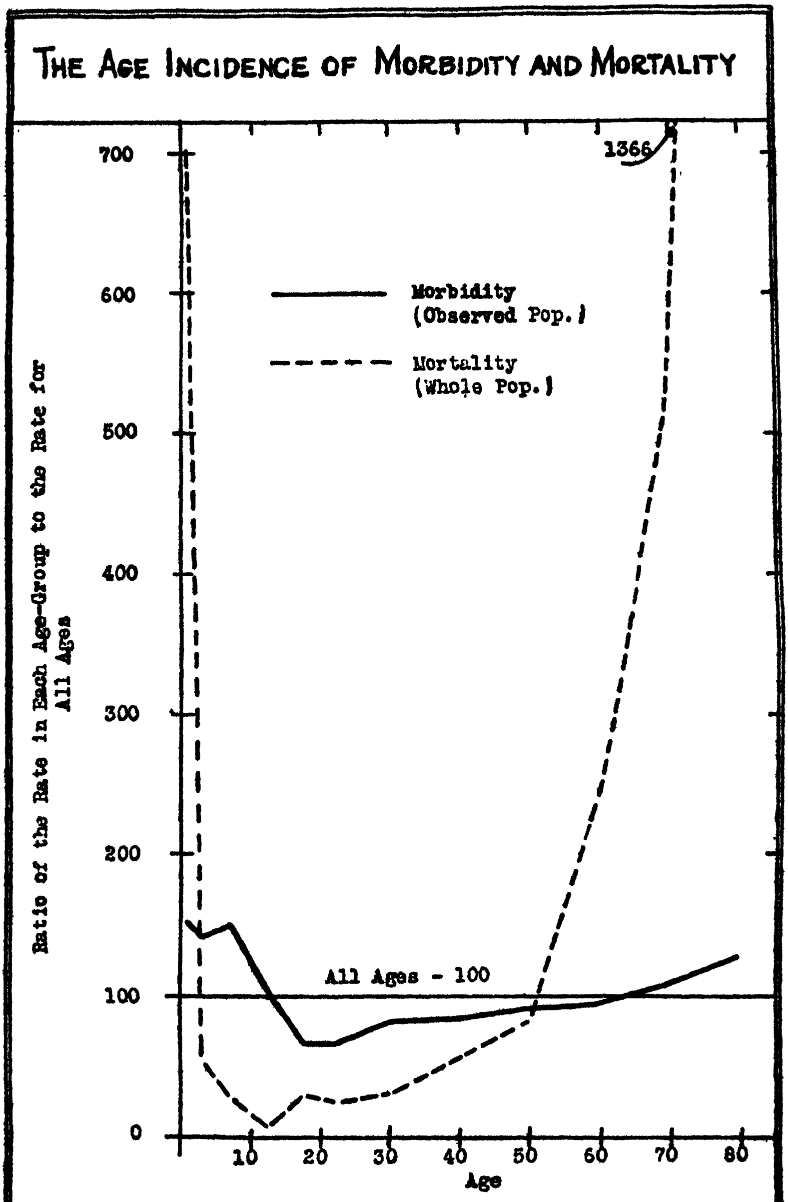
FIG. 3

Here again the inadequacy of mortality statistics as an index of health at different ages is clearly shown. If the annual number of illnesses be compared to the annual number of deaths[3] at different ages, we obtain the following approximate ratios:

Age group:	Number of illnesses per death
Under 5	60
5–14	550
15–24	200
25–44	150
45–64	50
65 and over	10

[2] It should be borne in mind that the smaller the proportion of slight illnesses the more will the morbidity curve tend to be similar to the mortality curve. In this instance, the records are not confined to severe or chronic illnesses but include practically all slight illnesses lasting more than two days.

[3] The morbidity rates for the canvassed population and the mortality rates for the entire white population of Hagerstown for the period December 1, 1921–December 31, 1922.



Based on morbidity records for 7,200 white persons observed for morbidity incidence, and mortality among the total white population, December 1, 1921–December 31, 1922, in Hagerstown, Md.

FIG. 4

In the light of this, it is difficult to refrain from remarking that if promotion of *health* is the first aim of public health work, the diseases that cause sickness rather than death demand first attention because they occur at the ages of adolescence and greatest usefulness.

The variations in the morbidity curve for age are extremely significant and invite more careful analysis. Our study shows that the highest illness rate is in childhood and that there is a marked drop until adolescence, when a gradual increase commences and continues throughout life. An analysis of these variations will require specific age rates for the different diseases. These will be presented in later papers and will, it is hoped, supply some of the details of the picture which has been sketched roughly here.

SUMMARY

A true picture of the ill health, and, therefore, of the problems to be attacked by those who are engaged in preventing disease, is not adequately portrayed by death statistics. The obvious reason for this is that mortality records by definition do not include the cases of illness that are not fatal, to say nothing of the suffering and the lowered vigor and the lessened efficiency among the living.

A study of illness in a general population group in a typical small city not only shows the inadequacy of mortality statistics for this purpose but suggests the kind of picture that complete morbidity records would afford. Looking at it in broad outline only, it was found in the group of persons studied that—

(1) Over 100 cases of illness occur annually for each death.

(2) More than half of the morbidity was due to respiratory diseases. The ratio of respiratory illnesses to deaths from respiratory causes was more than 300 to 1.

(3) Diseases and disorders of the digestive system caused an annual illness rate of 117 per 1,000 but a mortality rate of less than 1 per 1,000, a ratio of about 200 to 1.

(4) The "general diseases"—epidemic and nonepidemic—composed principally of those diseases against which public health effort has been mainly directed, caused only 11 per cent of all illnesses.

(5) While deaths occur principally in infancy and in old age, ill health, as measured by the incidence of illness, occurs with comparatively little variation throughout life. It is prevalent among the young, those in the "prime of life," and the aged without much discrimination.

This picture inevitably suggests a point of attack upon the causes of ill health not adequately recognized now—the diseases which are incident between the extremes of life. If, as it is now the custom, success of public-health work is to be measured in money terms, surely no more cogent argument could be put forward than that

of the economy of preventing loss of the efficiency of the population at those ages when health means the most in production. It is not hard to figure that a day of sickness prevented at the age of 30 or 40 is more profitable than at the age of 70. But, in a broader sense, the diseases which cause ill health are a challenge to the sanitarian, not merely because they have an exhausting effect upon man's power to resist death but because they lessen his ability to achieve and his capacity to enjoy life in the years of his most abundant strength.

ACKNOWLEDGMENTS

The continuous field observations were made by the following assistants: F. Ruth Phillips, Mrs. Mary King Phillips, Louise Simmons, Clara M. Bell, Clarice Buhrman, and Mrs. Alcesta Owen, under the immediate supervision of Passed Assistant Surgeon R. B. Norment, jr., Acting Assistant Surgeon A. S. Gray, and later of Surg. C. V. Akin. It is desired to express grateful acknowledgment of the assistance rendered by the various members of the Washington County Health Demonstration, by the school officers and teachers, by the physicians, and by the households, without whose cooperation a study of this kind would have been impossible. I am indebted to my associates in the Statistical Office, especially Associate Statistician S. D. Collins, for assistance in the tabulation and analysis of the data.

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STUDIES ON THE INDUSTRIAL DUST PROBLEM [1]

I. DUST INHALATION AND ITS RELATION TO INDUSTRIAL TUBERCULOSIS

By Leonard Greenburg, Associate Sanitary Engineer, United States Public Health Service, Office of Industrial Hygiene and Sanitation

That certain groups of persons are, by virtue of their occupation, exposed to excessive quantities of atmospheric dust and thereby suffer high rates of mortality from respiratory disease, was long ago noted by philosophers and students of industrial hygiene. Undoubtedly the earliest examples of exposure to hazardous dusts

[1] Thesis presented in partial fulfilment of the requirements for the degree of doctor of philosophy at Yale University.

must have been in connection with implement making, mining, quarrying, pottery manufacture, and the building of homes by such persons as the early cliff-dwellers. Sir Charles Lyell (1) and Dr. Isaac Taylor (2) have described the localization of prehistoric factories for the manufacture of flint instruments. Recently, Doctor Collis (3) has shown that the present flint-knappers of Brandon, the lineal occupational representatives of the group described by Sir Charles Lyell, suffer a severe mortality from phthisis induced by the flint dust generated in their work. More recently, Doctor Hoffman, in a communication entitled "Why the Cliff-Dwellers Vanished" (4), suggests continuous dust exposure in the making of stone implements, in the carving of shelters out of solid stone, and in the making of pottery, as a causative factor in the complete disappearance of this primitive population.

Hippocrates (5) speaks of the metal digger as a man who "has his right hypochondrium bent, a large spleen, and a costive belly; breathes with difficulty, is of pale, wan complexion, and is liable to swellings in his left knee." Pliny the elder (6), writing in the first century is, perhaps, the first to mention the use of protective devices for workers in the dusty trades. He says:

> Those employed in the works preparing vermillion cover their faces with a bladder skin, that they may not inhale the pernicious powder, yet they can see through the skin.

Georges Agricola, in De Re Metallica (7), discusses the hazards of mining as follows:

> Where water in shafts is abundant and very cold, it frequently injures the limbs, for cold is harmful to the sinews. To meet this, miners should make themselves sufficiently high boots of rawhide, which protect their legs from cold water; the man who does not follow this advice suffers much ill-health, especially when he reaches old age. On the other hand, some mines are so dry that they are entirely devoid of water, and this dryness causes the workman even greater harm, for the dust which is stirred and beaten up by digging penetrates into the windpipe and lungs, and produces difficulty in breathing, and the disease which the Greeks call ασθμα (asthma). If the dust has corrosive qualities, it eats away the lungs and implants consumption in the body; hence in the mines of the Carpathian Mountains women are found who have married seven husbands, all of whom this terrible consumption has carried off to a premature death. At Altenberg, in Meissen, there is found in the mines black pompholyx, which eats wounds and ulcers to the bone; this also corrodes iron, for which reason the keys of their sheds are made of wood. Further, there is a certain kind of cadmia (probably cobalt) which eats away the feet of the workmen when they have become wet, and similarly their hands, and injures their lungs and eyes. Therefore, for their digging they should make for themselves not only boots of rawhide, but gloves long enough to reach to the elbow, and they should fasten loose veils over their faces; the dust will then neither be drawn through these into their windpipes and lungs, nor will it fly into their eyes. Not dissimilarly, among the Romans the makers of vermillion took precautions against breathing its fatal dust.

Ramazzini, in his famous work on the "Diseases of Artificers and Tradesmen" (8), states that stonecutters "oftentimes suck in, by inspiration, the sharp, rough, and corner'd small Splinters or Particles that fly off; so that they are usually troubled with a cough, and some of 'em turn Asthmatick and Consumptive." He adds: "And in dissecting the corps of such Artificers, the lungs have been found stuffed with little Stones. Diemerbroek gives a curious Relation of several Stone-cutters that dy'd Asthmatick, and were open'd by him; in whose Lungs he found such heaps of Sand, that in running the knife through the Pulmonary Vesicles, he thought he was cutting some Sandy Body."

Thackrah, in his treatise on "The Effects of the Principal Arts, Trades, and Professions on Health and Longevity" (9), emphasizes the seriousness of respiratory disease in various dusty occupations. He states that miners in the north of England "suffer considerably when employed in ore in the sandstones, but are sensible of no inconvenience where the ore is in limestone." He cites a parallel condition among the grinders of Sheffield: "The fork-grinders, who use a *dry* grindstone, die at the age of 29 or 32, while the table-knife grinders, who work on *wet* stones, survive to between 40 and 50." Draw-filing of cast iron was at this time an exceedingly hazardous operation.

> The particles rise so copiously as to blacken the mouth and nose. The men first feel the annoyance in the nostrils. The lining membrane discharges copiously for some time, and then becomes preternaturally dry. The air tube is next affected. Respiration is difficult on any increase of exertion, and an habitual cough is at length produced. At the same time, the digestive organs become impaired; and morning vomiting, or an ejection of mucus on first rising, is not infrequent. The disorder varies of course with the constitution of the individual; but the common termination, when men pursue the employment for years, is bronchial or tubercular consumption.

In more recent times, the statistics of industrial tuberculosis among steel grinders at Sheffield, England, and at Solingen, Germany, have been widely quoted in many of the textbooks and monographs upon this subject.

AMERICAN STUDIES OF THE RATIO OF TUBERCULOSIS DEATHS TO TOTAL DEATHS IN VARIOUS INDUSTRIES

Data obtained in regard to the prevalence of occupational disease in different countries and at different periods of time must be interpreted with the greatest caution, on account of the fact that industrial processes differ so widely and change so frequently. Recent statistics for the United States are necessary to throw a clear light on this problem; and such data, in order to be of conclusive value, should be available in the form of actual death rates, based on knowledge of the population exposed as well as on the number of deaths occurring, and properly corrected for the age distribution of the group involved.

Unfortunately, such complete statistical data as we desire are difficult to obtain in the existing state of American vital statistics, exact knowledge of the population at risk in a given occupation, classified by age, being obtainable only with great difficulty and by special and intensive research. For the most part, therefore, students of this subject have fallen back on an indirect index of the tuberculosis death rate, in the form of a ratio between deaths due to tuberculosis and those due to all causes. Data of this sort may, of course, be obtained with ease from the mortality records in any registration office or actuarial department.

Three important studies of this kind have been made in the United States during the past decade. The first of these is contained in bulletins of the United States Bureau of the Census giving the proportionate mortality by occupations of the population of the registration area for 1908 and 1909. The second is a bulletin on the industrial experience of the Metropolitan Life Insurance Co., by L. I. Dublin, published as Bulletin 207 of the United States Bureau of Labor Statistics (10). The third and most extensive collection of statistics of this type is contained in a series of exhaustive monographs by F. L. Hoffman, of the Prudential Insurance Co. of America, the last and most important of which was published in 1918 as Bulletin 231 of the United States Bureau of Labor Statistics (11).

In the analysis of statistical data of this kind, it is clearly most important that the groups under consideration be fairly comparable, so that the effect of industrial hazards will not be complicated by the influence of social and economic factors of a more general nature. In Doctor Hoffman's studies, for example, ratios presented for the various dusty trades are based on the industrial experience of the Prudential Insurance Co., but Doctor Hoffman uses as a norm for comparison the ratio for males in the registration area obtained from the data of the United States Census Bureau. On this basis almost all the industries which he tabulates show a surprisingly high tuberculosis ratio, including many trade designations of workers, such as "iron and steel workers," who can hardly be considered as generally exposed to a serious dust hazard. These results, as presented in the earlier publications of the Prudential Insurance Co., aroused the suspicion that the whole group covered by industrial policies might be a selected one, and in the report of Doctor Hoffman cited above (11), the solution to the problem is at last presented. In this report as a whole the old comparison is presented of tuberculosis ratios in each "dusty" trade among industrial policy-holders, with the ratio for all males in the registration area; but in one place (Table 11, p. 56) Doctor Hoffman gives the ratios for all occupied males in the Prudential experience. From this table it appears that the industrial policy-holder group does, as

a matter of fact, exhibit a consistently higher ratio for all occupied males, irrespective of exposure to dust. Doctor Hoffman's abnormally high ratios are, therefore, probably due to the general social and economic conditions of the wage-earner's life and to the fact that the group is an industrial one.

TABLE 1.—*Ratios, in per cent, of tuberculosis deaths to total deaths in occupations exposed to mineral and metallic dusts* [1]

Occupation groups	United States registration area, age groups						Prudential experience, age groups					
	15–24	25–34	35–44	45–54	55–64	15 and over	15–24	25–34	35–44	45–54	55–64	15 and over
ccupied males	28.1	30.9	24.0	14.4	7.6	14.9	33.2	40.9	32.9	19.0	8.8	20.5
, tile, and terra cotta kers							22.9	35.3	19.8	18.6	10.7	15 6
nd steel workers	19.8	26.1	23.3	16.7	8.5	16.9	30.0	34.1	31.3	14.7	8.7	21.0
erers	25.0	31.5	34.5	16.4	7.8	16.7	34.5	43.6	40.4	23.5	11.8	21 9
ers							23.7	40.4	30.7	21.6	13.9	23.0
r hangers							35.1	44.0	42.5	15.7	11.5	29.1
ers, glaziers, and varrs	30.8	36.9	29.2	17.4	9.0	18.7						
e and tinware work-	39.4	36.7	34.8	13.7	6.6	18.7						
[illegible]	50.0	39.7	23.4	14.1	8.5	17.8	50.9	58.3	45.3	21.2	11.1	29.3
blowers							45.1	53.3	31.3	28.3	15.4	32.1
r glassworkers							31.5	51.1	34.4	23.1	15.5	30.5
ssworkers	47.2	42.6	33.1	19.7	7.9	30.0						
l and instrument makers							37.5	52.7	36.9	33.7	10.4	31.9
ters							31 2	49.6	39.8	30.2	21.1	32 2
rble and stone cutters	26.2	43.5	44.1	41.6	23.3	30.7	38.3	51.1	44.4	39.0	26.7	33.6
ssworkers							58.2	51.0	43.8	24.2	16.1	36.7
npositors and typesetters							46.3	55.9	41.1	24.9	9.8	36.8
men							42.9	47.7	44.0	20.0	11.1	39.6
rs, lithographers, and men	43.6	50.0	36.3	21.5	7.7	29.5						
rs							43.4	56.1	44.0	24.9	14.3	36.8

[1] The figures given are taken from Bulletin No. 231, Bureau of Labor Statistics, United States Department of Labor.

This constant difference between the Prudential figures and the census data is clearly brought out in Table 1, which has been compiled from the tables in Doctor Hoffman's bulletin so as to include all the industries exposed to metallic or mineral dusts, for which 500 or more deaths from all causes at all ages were available. It is evident that in almost every instance in which the two series can be compared, the Prudential ratios are from 25 to 50 per cent higher than those for the registration area.

It seems evident that a comparison between the Prudential figures for a given dusty trade and the census figures for all occupied males is not a fair one, and that the conclusion indicated by such a comparison—namely, that such groups as the iron and steel workers experience an excessively high death rate from tuberculosis as a result of the dust hazard—is unwarranted. As a matter of fact, comparisons made in each case with the corresponding groups—census figures for a dusty trade with census figures for all occupied males, or Pru-

dential figures for a dusty trade with Prudential figures for all occupied males—show that the tuberculosis ratio for the iron and steel workers is about normal, as might be expected for so diversified an occupational group.

Comparing specific trades in the Prudential experience with the Prudential group as a whole, and comparing specific trades in the registration area with the registration group as a whole, both sets of data are highly illuminating and bring out very clearly the excessive tuberculosis ratios characteristic of certain occupations. The two sets of figures, allowing for the constantly higher ratios throughout the Prudential experience, check each other very closely, even in such details as the concentration of the highest ratios at ages und 35 among jewelers, and at ages over 35 among marble and sto. cutters.

It is interesting to notice that Doctor Dublin's statistics for industrial experience of the Metropolitan Life Insurance Co. (correspond almost exactly with the Prudential figures. For all ma in the Metropolitan experience, the ratio of tuberculosis death total deaths was 33.8 per cent at ages 15–24; 40.9 per cent at 25–34; 32.9 per cent at ages 35–44; 18.5 per cent at ages 45–54; . per cent at ages 55–64; 2.9 per cent at ages 65 and over; and 20 per cent for all ages over 15.

These figures are almost identical with those presented in the upp line of the right hand half of Table 1, and it is evident that the rati shown are characteristic of the industrial group as a whole.

Even when comparisons are made in the correct manner betw a dusty trade and an average group of as nearly as possible the s general social and economic status, there must always be a la. measure of doubt in regard to the significance of high tuberculosis ratios. Ratios, as distinct from rates, depend on two independent variables, and a high ratio of tuberculosis deaths to total deaths may be produced by a low mortality from other causes, as well as by a high mortality from tuberculosis. Thus, the tuberculosis ratio among female college professors and teachers, according to Dr. G. M. Kober (12), is high—a ratio which Doctor Kober attributes to the alleged fact that the teaching profession is "usually recruited from weak stock." Prof. L. M. Terman, in his book on "The Teacher's Health" (13), has also given currency to the view that teachers suffer to an exceptional degree from tuberculosis. The only careful statistical study of this subject with which I am familiar, Dr. L. I. Dublin's paper on "Physical Disability of New York City School Teachers" (14), shows that this conception is erroneous. The high ratio of tuberculosis deaths to total deaths among teachers is shown in this investigation to be due to the fact that the death rate from causes other than tuberculosis in this group is exceedingly

small, the tuberculosis rate itself being less than two-thirds of the rate prevailing among females in the community at large, at the age of 15 and over.

STUDIES OF THE ACTUAL DEATH RATES FROM TUBERCULOSIS IN VARIOUS DUSTY TRADES

It is by no means intended to discredit all use of mortality ratios, and still less to throw doubt upon the real importance of the problem of industrial tuberculosis. We desire only to emphasize the possible fallacies in the use of ratios and the necessity for controlling deductions by the determination of actual death rates wherever possible.

In England numerous statistics are available which indicate that in many industrial employments, such as metal mining, marble and stone cutting, and grinding and polishing, high tuberculosis ratios are associated with high tuberculosis rates. In Table 2, for example, are presented the data for occupations exposed to metallic dusts, from the Sixty-Fifth Annual Report of the Registrar-General, rearranged and supplemented by ratio computations. They show that the excessive ratios of tuberculosis deaths to total deaths indicate an actual excess death rate from tuberculosis of one to two persons per thousand population; while at the later age periods, the death rate from causes other than tuberculosis among the workers exposed to the influence of metallic dusts is also well above the normal rate.

TABLE 2.—*Mortality from pulmonary tuberculosis and other causes in occupations exposed to metallic dust, compared with that of all occupied males, England and Wales, 1900–1902.*

Age period	All occupied males				Occupations exposed to metallic dusts			
	Deaths per 1,000			Per cent due to tuberculosis	Deaths per 1,000			Per cent due to tuberculosis
	Total	Tuberculosis	Other causes		Total	Tuberculosis	Other causes	
15-19	2.4	0.5	1.9	22	2.7	0.7	2.0	27
20-24	4.4	1.5	2.9	35	5.3	2.7	2.6	52
25-34	6.0	2.0	4.0	34	6.3	3.3	3.0	53
35-44	10.2	2.7	7.5	27	11.7	5.0	6.7	43
45-54	17.7	3.0	14.7	17	21.0	5.2	15.8	25
55-64	31.0	2.2	28.8	7	36.0	3.9	32.1	11
65 and over	88.4	1.1	87.3	1	95.5	1.5	94.0	2

The earlier reports of the medical officer of health of the city of Sheffield contain particularly significant data in regard to the mortality in the intensively hazardous processes of the cutlery industry. The report for 1910, for example, shows a mortality from pulmonary tuberculosis among grinders of 14.8 per thousand for the age of 18 and over, as compared with a rate of 2.7 for all occupied males of

the age of 20 and over. The corresponding mortality from all other causes was 15.1 per thousand for grinders and 13.7 for all occupied males; the ratio of tuberculosis deaths to total deaths was 49 per cent for grinders and 16 per cent for all occupied males.

We may cite one more example from the field of British industry, presented in the Report of the Departmental Committee on the Dangers Attendant on the Use of Lead and the Danger or Injury to Health Arising from Dust and Other Causes in the Manufacture of Earthenware and China (15). Dr. G. Reid, of Stafford, presents the following computation (Table 3), which indicates that even in a trade like pottery making, which is generally considered as one of the industries most affected with plumbism, lead poisoning is far less important as a factor in the death rate than is industrial tuberculosis.

TABLE 3.—*Mortality from plumbism and respiratory diseases among Staffordshire potters*

Nature of industrial illness	Number of workers exposed to risk	Average annual deaths attributable to employment	Annual death rate per 1,000
Lead poisoning	5,299	4	0.8
Pulmonary tuberculosis and other respiratory diseases	21,000	148	7.0

In the United States we have a few—but only a very few—data of this kind which show the actual death rates from tuberculosis in employments exposed to the hazards of industrial dusts. The only general collection of statistics of this sort with which we are familiar was presented in a special bulletin on "Tuberculosis in the United States," prepared by the Bureau of the Census for the meeting of the International Congress of Tuberculosis, held in Washington in 1908. The highest and the lowest rates included in this tabulation are presented in Table 4, and they are suggestive and interesting, although the absence of an analysis by age periods detracts seriously from the value of the results, as does the fact that the occupational groups are large and often loosely defined. The high rates among cigarmakers and tobacco workers, compositors, printers and pressmen, servants, bookkeepers, clerks and copyists, and the low rates among bankers, brokers, and officials of companies are no doubt in large measure due to the age composition of the respective groups. In the high rate among servants the racial factor must certainly play an important part.

Important data in regard to the effect of mineral dusts upon the tuberculosis rate have recently been presented in the "Second Preliminary Report of the Committee on Mortality from Tuberculosis in Dusty Trades" (16), which deals primarily with conditions in the

quarrying districts of Vermont. We have presented in Table 5 certain selected data from this report which indicate that in towns, and even in entire districts, where a considerable proportion of the population is exposed to mineral dust, the tuberculosis death rate for the entire administrative unit may be increased far above the normal value.

TABLE 4.—*Mortality from tuberculosis in certain occupations in the registration States for the age of 10 years and over, 1900*

Occupation	Deaths per 100,000	Occupation	Deaths per 100,000
Marble and stone cutters	540.5	Steam-railroad employees	129.8
Cigarmakers and tobacco workers	476.9	Clergymen	123.5
Compositors, printers, and pressmen	435.9	Miners and quarrymen	120.9
Servants	430.3	Farmers, planters, and farm laborers	111.7
Bookkeepers, clerks, and copyists	398.0	Lumbermen and raftsmen	107.1
Laborers (not agricultural)	370.0	Bankers, brokers, and officials of companies	92.1
All occupied males	236.7		

TABLE 5.—*Mortality from tuberculosis of the lungs in quarrying districts of Vermont, 1906–1915*

District	Tuberculosis death rate per 100,000 population	District	Tuberculosis death rate per 100,000 population
State of Vermont	90.6	Town of Dorset (marble center)	149.4
Granite-cutting districts	143.0	Slate districts	111.3
Barre City (granite center)	233.2	Town of Castleton (slate center)	176.0
Marble districts	97.1		

A comprehensive study of this kind conducted by Dr. Herbert Drury (17) deals with the incidence of tuberculosis among the employees of an ax factory in the State of Connecticut. The factory in question employs about 800 men and is situated in a rural community where other industrial activities are largely agricultural. The vital statistics for the four adjacent towns in which the operatives might reside have been analyzed in detail for a period of 20 years, and each death certificate for tuberculosis or other respiratory disease has been transcribed and investigated. The fact that the medical consultant of the ax factory and the superintendent had both been in the employ of the company during the two decades covered by the investigation made it possible to trace out practically every death certificate, and to determine the actual occupation of the deceased. The final analysis of the results yielded the astonishing figures presented in Table 6.

Thus, we find the entire population of the mill district showing a tuberculosis rate of 200, as compared with 150 for the State as a whole. The mill population itself has a rate rising to 650, and the

group of polishers and grinders the astounding rate of 1,900. The other employees of the mill are not entirely comparable in age, race, and general social and economic status with the polishers and grinders, but it is evident that the high death rate among the polishers and grinders, who suffer from a tuberculosis death rate over ten times the normal rate, is primarily due to the hazards of their occupation. Nor is tuberculosis the only form in which they pay a penalty for their hazardous employment. Doctor Drury reports that the mortality from pulmonary infections other than tuberculosis for the period 1900 to 1919 was 430 per 100,000 for the polishers and grinders, as compared with 170 for the other employees of the ax factory.

TABLE 6.—*Mortality from tuberculosis of the lungs in a Connecticut ax factory, 1900-1919*

District or group	Death rate per 100,000	District or group	Death rate per 100,000
State of Connecticut	150	Employees of ax factory (all)	650
State of Connecticut (male population)	170	Employees of ax factory, polishers and grinders	1,900
Ax factory district (3 towns, entire population)	200	Employees of ax factory, others	160

Mention must be made of a recent and intensive study of this subject by Dr. F. L. Hoffman (18), among the granite cutters of Washington and Caledonia Counties of the State of Vermont. This study, in which the mortality data for 26 years were analyzed, included the study of 18,406 death certificates; sanitary surveys were made of the homes and working places of the groups studied, the anthropometric status of 1,869 persons engaged in the industry was determined, and lastly, intensive physical examinations and X-ray pictures of 427 of the men were made.

This study disclosed the fact that the granite-stone industry is carried on by wage earners who live under sanitary conditions above the average, whose housing conditions are above the average, and whose anthropometric status is indicative of a superior physique. Yet this group suffers from a very high mortality for tuberculosis, as disclosed in Table 7.

Doctor Hoffman at one point tersely summarizes his conclusions as follows:

> The general conclusions derived from these data would therefore seem to support the theory that granite cutters in the State of Vermont are subject to an excessive frequency of death from pulmonary tuberculosis, not because of an exceptional risk of contact infection, or because of inferior physique, or because of unfavorable housing conditions or other sanitary deficiencies, but primarily because of the occupational exposure, which in its final analysis is reduced to the dust hazard resulting from the excessive use of pneumatic tools.

Table 7.—*Mortality from pulmonary tuberculosis among granite cutters, compared with that of the general adult population of Vermont, 1896 to 1918, by 5-year periods*

[Data for granite cutters taken from experience of the Granite Cutters' International Association]

Granite cutters				General adult population (20 years of age and over)		
Period	Number exposed	Deaths	Death rate per 100,000	Aggregate population	Deaths	Death rate per 100,000
1896–1899	5,584	22	394.0	862,468	1,636	189.7
1900–1904	10,747	38	353.6	1,099,708	1,821	165.6
1905–1909	14,594	105	719.5	1,120,253	1,669	149.0
1910–1914	17,103	137	801.0	1,140,798	1,370	120.1
1915–1918 [1]	12,494	133	1,064.5	694,341	752	[2] 108.3

[1] Exclusive of last three months of 1918.
[2] 1915–1917.

THE SPECIFIC INFLUENCE OF PARTICULAR INDUSTRIAL DUSTS IN RELATION TO TUBERCULOSIS

It is an interesting and significant fact that in every instance, as far as we are aware, in which a heavy incidence of tuberculosis has been clearly shown to result from exposure to industrial dust, the dust in question has been in part at least made up of crystalline rock. It is silicosis which lies at the basis of miners' phthisis, and silicosis is probably the chief predisposing factor in tuberculosis among ax grinders, although in grinding and polishing, steel dust may, and probably does, play a part as well. No such striking statistical results as those cited for mining, quarrying, and grinding, and pottery making have yet been presented for industries where crystalline rock particles were not involved. But silica dust is not looked upon as the predisposing agent only in the cases where it is present in excessive quantities. It is, indeed, being pointed out as the harmful agent even in those cases where it is present in smaller and less significant amounts. Recently this very question has been under discussion. Dr. E. H. Ross, in an interesting letter in the London Daily Times quoted by Doctor Hoffman (19), attributes the excessive mortality from phthisis among printers to silica dust present in the printers "list." It is to be remarked in passing, however, that in the minds of many workers in the field, the existence of quantities of silica dust sufficient to cause the excessive phthisis rate in the printing trades is not proved beyond doubt (20), (21).

Turning now from the consideration of silica dust—of major importance in the problem of industrial tuberculosis—to other kinds of dusts, we find a strikingly different picture.

Thackrah (9) points out that bricklayers, lime workers, and plasterers and whitewashers, all of whom are exposed to lime dust, suffer from it no sensible injury (pp. 46 and 47). Reckzeh (22) investigated the relation of lime-dust inhalation to pulmonary tuberculosis

and found that tuberculosis was rare in lime-producing districts. Selkirk, quoted in the Journal of the American Medical Association (23), also found phthisis to be rare among lime workers. He is so firm in his belief as to the beneficial effects of lime dust that he even hints at the organization of lime works as curative tuberculosis colonies. Recent work in Japan has confirmed the findings of Reckzeh and Selkirk: Nagai (24) found tuberculosis to be uncommon among workers about lime kilns, and also that lime dust had no detrimental effect on the lung tissue of guinea pigs subjected to it.

Ample evidence is at hand to show that the inhalation of cement dust also does not predispose to tuberculosis. In this industry enormous amounts of dust are found in the grinding and sacking rooms, so that there exists no question as to definite dust exposure. Dr. G. E. Tucker (25) studied the problem at a cement mill in California. He concluded:

As a result of an investigation of the dust problem in conjunction with the manufacture of Portland cement, based upon the review of literature on the subject, the examination of 956 employees in one plant, examinations of men employed in the dusty departments of four other mills, the medical records of employees and guinea pig experimentation, there appears to me to be no evidence of injurious effects from cement dust upon employees engaged in its manufacture.

The clearest and most striking case, however, is that of coal dust, which, if it has any effect, appears to exert a protective influence against the development of active tuberculosis. A clearly marked fibrosis (anthracosis) follows the inhalation of coal dust, a condition which appears to favor a high mortality from acute respiratory disease; but the tuberculosis death rate among coal miners is uniformly and characteristically low. The figures presented in Table 8, below, from Doctor Hoffman's study (11), bring out the typical relation with great clearness.

TABLE 8.—*Mortality in coal-mining districts of Pennsylvania*

District	Death rate per 100,000		
	Pulmonary tuberculosis	Other forms of tuberculosis	Other respiratory diseases
Scranton	79.9	16.6	261.2
Wilkes-Barre	74.9	19.4	212.5
Remainder of State	110.5	16.4	184.2

That coal miners suffer a high mortality from acute respiratory diseases has been noted by many workers in this field. Wainwright and Nichols (26), Collis (27), and lastly, Doctor Dublin (28) have made this point very clear and practically incontrovertible.

Doctor Dublin, in his paper, presents the following very interesting table:

TABLE 9.—*Influenza-pneumonia mortality among bituminous coal miners, October to December, 1918, compared with all occupied white males, Industrial Department, Metropolitan Life Insurance Co.*

Age period	Annual death rate per 1,000	
	Bituminous coal miners	All industrial white males
All ages	50.1	22.3
15–25	29.5	17.5
25–45	62.1	32.6
45–65	44.4	11.7

And lastly, the occupational statistics presented by the Registrar-General of Great Britain include a particularly striking comparison between coal miners and tin miners, the former exposed to coal dust, the latter to hard crystalline dust. The comparative mortality figures for tuberculosis in 1900–1902 were 186 for all occupied males, 85 for coal miners, and 838 for tin miners.

LABORATORY STUDIES ON THE INFLUENCE OF PARTICULAR DUSTS IN RELATION TO TUBERCULOSIS

In addition to the statistical studies referred to in the previous portions of this paper, studies which aim to demonstrate the effects of particular dusts in relation to tuberculosis, there exists another type of evidence, namely, animal experiments, which in some cases casts much light on this question.

Reference has previously been made to the work of Nagai (24), who found that lime dust had no detrimental effect on the lung tissue of guinea pigs subjected to it. Middleton (29) quotes the results of the experimental work of Beattie, in which it was found that exposure of animals to limestone dust produced no increased susceptibility to tuberculosis. And recently, Gardner and Dworski (30) have reported the results of a very interesting series of experiments on the effects of the inhalation of marble dust (the particular sample used contained 3.5 per cent of insoluble residue). It was found as a result of these experiments that the test animals, after long exposure, develop a moderate silicosis (due probably in some measure to the silicious matter in the dust), which rendered the lung tissue more susceptible to tuberculosis, with a consequent more chronic type of tuberculosis and a definite delay in resolution. Obviously, if the effect of limestone is to be clearly defined, the silica content of the dust used must be practically nil. On the other hand, this series of experiments clearly discloses the well known fact that

it is possible with animal experiments to discern finer differences in the effects of dust than by a statistical method. Cesa-Bianchi (31) exposed animals to cement dust largely composed of lime and found that this dust greatly increased the susceptibility to tuberculosis. In striking contrast to this finding, however, is the work of Tucker (25) which was previously mentioned. Tucker exposed guinea pigs to the dust in a cement plant. The raw mix at this plant consisted of approximately 76 per cent of a $CaCO_3$ and 15 per cent silica. The final cement was composed of about 63 per cent CaO and 23 per cent of silica. As a result of his experiments Tucker decided that the dust in question had no detrimental effect on health. It is to be noted that in the experiments of Gardner and Dworski the animal exposures were carried out over a long period of time, in some cases as long as ten months, while Tucker used a shorter period of dusting.

Animal experiments on the action of coal dust with respect to pulmonary lesions have yielded rather clear-cut results. Mavrogordato (32) found that coal dust was rapidly eliminated from the lung with moderate dusting. For example, he found that the lungs of guinea pigs might pass for normal at the end of one year. On the other hand, he found that with intense dusting, coal dust behaved in its action as other more harmful dusts. And in a second communication (33) he quotes some experiments which indicate that coal dust, when mixed with silica dust, may even prevent, by rapidly eliminating the silica dust from the lung, the formation of pathological lesions in the lung, which would ordinarily ensue if silica dust alone were breathed by the experimental animals. Willis (34) also found, in a series of experiments similar to Mavrogordato's "intense exposure" series, that after infection, tubercles develop somewhat more abundantly in lungs of animals exposed to coal dust than in those of normal animals. The ratio of tubercle development in the two types was found by him to be as three to two.

Of all the experimental work on the effects of various dusts, silica has yielded the most conclusive results. It has been found by Mavrogordato (32) (33) that the inhalation of silica dust gives rise to long-continued chronic changes in the lung; the work of Gardner (35) on this dust has yielded the same results. Gardner used dust of dark Barre granite consisting of nearly 70 per cent silica. This was suspended in the atmosphere of a special dusting chamber in which the animals were placed, the animals being exposed for periods of from 36 to 48 hours per week for 2 to 7 months. Gardner concluded that the occurrence of tubercles is more frequent in dusted than undusted lungs and that such lesions in dusted animals tend to run a more prolonged course than those in animals not exposed to dust but otherwise similarly treated.

As bearing on the reasons for the above-noted phenomena, a very interesting series of experiments may be cited. Fenn (36) has found from experiments conducted *in vitro* that carbon is ingested by phagocytes about four times as readily as quartz, and that this difference in the ingestion rates increases as phagocytic action increases. The reasons for the specific harmful effects may well be connected in some manner with this phenomenon.

THE PATHOLOGY OF DUST INHALATION

In describing the end results of dust inhalation, many medical terms have come into use; and by the indiscriminate use of these terms much confusion has been brought about in the literature of this subject. An examination reveals the fact that such terms as "miners' phthisis," "silicosis," "industrial tuberculosis," and "pneumoconiosis," are used to replace each other without careful consideration of the exact process at hand.

The inhalation of air charged with dust gives rise to the presence of certain quantities of dust in the lung. This condition is perhaps best described by the word "pneumonoconiosis" (built from the Greek roots meaning *lung* and *dust*). When, as is usually the case, the dust has come into the atmosphere through a particular industrial process and the persons who acquire it are industrially employed, the condition is best referred to as "industrial pneumonoconiosis." The term "industrial pneumonoconiosis" conveys no idea as to the particular dust breathed by the workers, and for this reason other and more descriptive terms have come to be employed in referring to the results of the inhalation of specific dusts, the term silicosis referring to the effects produced by the inhalation of silica dust, anthracosis, of coal dust, and siderosis, of iron dust.

The development of the stages in silicosis has been well described by the South African workers (37), from whom I have borrowed freely in the following description. When heavily dust-laden air is breathed, the natural defenses of the body prevent the dust from gaining free access to the lungs. It is only when the filtering ability of the nasopharyngeal passages is overtaxed by comparatively large quantities of dust that some finds its way into the alveoli of the lungs. The irritation caused by the dust in this situation leads to a proliferation and shedding of the epithelial cells which line the alveolar walls. The larger of these cells appear to be actively phagocytic and take up the dust with great avidity. They may be detected in the alveoli and also in the alveolar walls. Drinker (37), in an interesting summary of the development of lung fibrosis, cites the work of Permar, which indicates that the actively phagocytic cell is of endothelial origin instead of epithelial origin, as suggested in the

South African studies. It is not the object of this paper to attempt so detailed an analysis of this question as Drinker has set forth, but it is to be noted in passing that at this time even his complete summary has failed to present a definite conclusion on this point. To continue, many of these dust-laden cells, whatever their origin, pass into the bronchi and are expelled in the expectoration, while others penetrate the alveolar walls and reach the lymph spaces, whence they are carried along the lymph channels to the adjacent lymph tissue, where they are lodged. Some may even continue further along the lymph channels to be arrested in the larger bronchial glands at the root of the lung. Fibrosis appears to begin about the collections of dust cells in the smaller lymph tissue islands. The presence of aggregations of mineral particles at these points leads to a proliferation of the connective tissue cells, a normal protective reaction. The fibroid changes then display themselves as irregular beadings along the course of the perivascular and peribronchial lymphatics. As this fibrous tissue increases in amount it tends to produce an obstruction to the lymphatics in the affected area, leading in turn to a further increase in dust accumulation. The interstitial fibrosis caused by the mineral particles then becomes more diffuse, with a consequent thickening of the alveolar walls, the interlobular septa, the adventitia of the smaller vessels, and the bronchioles. In the early stages of silicosis diffuse changes are not marked; the process is mainly perivascular and peribronchial. In the later stages the process proceeds to the larger bronchi and larger vascular trunks and also to the subpleural lymph channels, where similar fibroid changes are produced in the subpleural tissue. Later on, constriction and even obliteration of the alveoli may take place. The important feature of the advanced stage of silicosis is the production of the large areas of fibroid consolidation. These larger areas arise, according to the South African workers, either through consolidation of smaller silicotic areas, or, secondly, by means of a massive increase and extension of the diffuse fibrosis, or, lastly, by means of tubercular complications. It is important to note that this massive consolidation is usually associated with a high mortality rate.

The exact reason for the ease with which this tissue may become infected is still under dispute. The South African workers do not, so far as I am aware, ascribe it to one cause, but rather to a combination of all the above-mentioned fibroid changes. According to a personal communication quoted by Gardner (35), "Krause would explain the increased susceptibility to tuberculosis infection of a lung previously exposed to dust on an anatomic basis; that is, as due to mechanical blocking of the lymphatics which provide means of exit from the lungs. Tubercle bacilli then entering such a lung can not

be eliminated as under normal conditions and they remain within the tissue, proliferate, and produce widespread lesion." Recently a rather newer view has been brought to bear on this question. According to this view, colloidal silica possesses poisonous properties. It has been shown by Cummings (39) that colloidal silica possesses marked power of inhibiting the action of complement. And later, Gye and Kettle (40) have shown that when a mixture of silica dust and tubercle bacilli is injected into a mouse subcutaneously, the silica breaks down the normal defense mechanism, permitting a sufficient number of organisms to remain alive to cause later a chronic infection. And these workers further maintain that although the subcutaneous injection of carbon blocks the lymphatics and produces a fibrosis, this fibrosis is nevertheless not the type produced by silica dust. They say, "The silica fibrosis is an end-result of a tissue destruction which can not be produced by carbon."

And finally, the question as to the time necessary to produce these pathological changes in the lung. Doctor Hoffman (18) presents a very interesting table, a portion of which follows:

TABLE 10.—*Mortality from pulmonary tuberculosis among the granite cutters of Barre, Vt., by years of exposure to granite dust, 1886 to 1919*

Exposure to granite dust (years)	Number of deaths	Exposure to granite dust (years)	Number of deaths
1		19	23
2		20	23
3	2	21	27
4	4	22	23
5	7	23	25
6	5	24	23
7	3	25	16
8	2	26	21
9	10	27	17
10	10	28	11
11	16	29	12
12	7	30	7
13	11	31	4
14	13	32	3
15	16	33	1
16	21	34	
17	19		
18	17	Total	399

In his summary (p. 2) Doctor Hoffman says:

The investigation brings out clearly the supremely important fact that the incidence of the lesion is practically proportionate to the length of trade life.

In conclusion, it would appear that the injurious effects of the inhalation of a particular harmful dust are proportional to the amount of dust breathed, this resolving itself into the important consideration of the duration of trade life and the quantity of dust suspended in the atmosphere.

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SMALLPOX AND VACCINATION

The instructive items printed below show the efficacy of successful vaccination in giving protection against smallpox, and emphasize the necessity for the fight that State and municipal health departments are maintaining against the disease, particularly with reference to the education of health workers and the people generally in the simple lesson of vaccination and revaccination.

The following is taken from a recent issue of the Health News, published by the New York State Department of Health:

"Statistics recently compiled by the division of communicable diseases, State Department of Health, illustrate in a vivid manner the relation of vaccination to the prevention of smallpox.

"The average morbidity rate for smallpox in the State, exclusive of New York City, in the years 1914–1924, inclusive, was 7.6 per 100,000 population. Under the existing law, vaccination is a prerequisite to school attendance in first and second class cities only. A larger proportion of the populations of these cities has therefore been vaccinated than in the rest of the State. In first and second class cities, the average rate for smallpox was only 3.1 per 100,000 as compared with a rate of 9.6 in the rest of the State. It is quite certain that the difference would have been even more marked had there not been a laxity in past years in enforcing the vaccination law in private schools located in first and second class cities.

"Other evidence of the efficacy of vaccination is furnished by the vaccination histories which were obtained in 487 out of the 488 cases reported in 1924. *Of these, 451 had never been vaccinated, 33 were vaccinated more than seven years previously, two had been vaccinated six or seven years previously, and one was vaccinated in 1922.* While it is not possible in the State as a whole to obtain figures showing the relative attack rate among unvaccinated persons as compared with those who have been vaccinated, general knowledge as to the large proportion of people who have at some time been vaccinated makes the above findings most significant, especially when the difference between the rates for first and second class cities and for other places is taken into consideration.

"The fact that three individuals contracted the disease despite their having been vaccinated within seven years, again reminds us that there is nothing sacred about the number 'seven' in connection with vaccination. As will be noted, one individual had been vaccinated two years before and yet contracted smallpox. The only safe way is to be revaccinated with potent virus until only an 'immune reaction' results."

The item below is taken from the Weekly Health Review, issued by the Department of Health of the City of Detroit:

"ARE YOU PROTECTED AGAINST SMALLPOX?"

"From December 6 through January 20 there have been 18 cases of smallpox with 6 deaths. Of these cases, all but one are traceable

to an outbreak in one of the schools. One unrecognized case resulted in the spread of the disease, until 17 persons have thus far contracted smallpox, and 6 of them have died.

"There were some 49 known contacts to the 17 cases. Of those, 7 had never been successfully vaccinated and 21 needed revaccination, since their scars were old and did not insure protection. This makes 28 out of 49, or 57.1 per cent, of the contacts who needed vaccination. Only 2 of the 17 cases of smallpox had ever been successfully vaccinated, and they had scars over 30 years old. Both of these cases had been vaccinated within the last 5 years, but the vaccinations did not take. They thought that they were protected. Obviously they were not.

"Coming on top of our comparatively recent smallpox experience this is a most discouraging story. Many people have apparently not yet learned that an *unsuccessful* vaccination does not mean protection. A *successful* scar of recent date is the only sure protection against smallpox.

"How many more people must die from smallpox before the lesson of vaccination and revaccination will be learned and practiced?"

The health officer adds that in Detroit no one has contracted smallpox who had been successfully vaccinated within five years.

DEATHS DURING WEEK ENDED JANUARY 31, 1925

Summary of information received by telegraph from industrial insurance companies for week ended January 31, 1925, and corresponding week of 1924. (From the Weekly Health Index, February 3, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended January 31, 1925	Corresponding week, 1924
Policies in force	58, 485, 831	54, 856, 494
Number of death claims	12, 486	11, 168
Death claims per 1,000 policies in force, annual rate	11. 1	10. 6

Deaths from all causes in certain large cities of the United States during the week ended January 31, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Heath Index, February 3, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Jan. 31, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Jan. 31, 1925 [2]
	Total deaths	Death rate [1]		Week ended Jan. 31, 1925	Corresponding week, 1924	
Total (63 cities)	7,425	14.2	[3] 14.3	856	[3] 968	
Akron	33			3	6	33
Albany [4]	31	13.5	17.6	3	3	67
Atlanta	62	13.9	20.6	11	15	
Baltimore [4]	262	17.2	[4] 16.7	25	36	73

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 62 cities.
[4] Deaths for week ended Friday, Jan. 30, 1925.

Deaths from all causes in certain large cities of the United States during the week ended January 31, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, February 3, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Jan. 31, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Jan. 31, 1925
	Total deaths	Death rate		Week ended Jan. 31, 1925	Corresponding week, 1924	
Birmingham	70	17.7	18.7	9	5	
Boston	247	16.4	14.0	39	23	103
Bridgeport	38			2	3	82
Buffalo	131	12.3	16.0	21	33	85
Cambridge	30	13.9	17.2	5	5	86
Camden	37	15.0	19.8	4	12	66
Chicago [4]	756	13.2	12.9	104	116	92
Cincinnati	132	16.8	17.6	11	14	65
Cleveland	191	10.6	11.5	27	33	67
Columbus	89	16.9	15.6	5	7	47
Dallas	50	13.5	11.9	5	8	
Dayton	25	7.5	10.2	2	6	32
Denver	95			10	6	
Des Moines	38	13.3	9.7	2	1	34
Detroit	249			62	59	105
Duluth	19	9.0	13.0	2	4	42
Erie	29			1	5	20
Fall River [4]	43	18.5	17.2	10	9	144
Flint	18			3	8	49
Fort Worth	44	15.1	9.5	8	5	
Grand Rapids	34	11.8	11.2	4	4	62
Houston	58			5	7	
Indianapolis	100	14.5	14.0	11	10	76
Jacksonville, Fla	33	16.4	17.8	3	3	67
Jersey City	81	13.4	14.2	8	14	56
Kansas City, Kans	26	11.0	12.8	3	4	63
Kansas City, Mo	104	14.8	11.7	7	9	
Los Angeles	278			24	22	67
Louisville	80	16.1	20.4	7	6	61
Lowell	32	14.3	14.4	3	6	52
Lynn	37	18.4	16.1	7	3	186
Memphis	123	36.8	26.6	9	12	
Milwaukee	79	8.2	10.3	13	17	59
Minneapolis	107	13.1	11.7	10	17	53
Nashville [4]	49	20.6	20.7	5	9	
New Bedford	29	11.2	13.4	4	7	66
New Haven	57	16.6	10.4	10	5	129
New Orleans	161	20.3	23.2	15	26	
New York	1,568	13.4	13.6	172	178	69
Bronx Borough	194	11.2	10.5	8	23	28
Brooklyn Borough	541	12.6	12.8	64	64	67
Manhattan Borough	643	14.9	15.8	74	72	74
Queens Borough	131	11.9	11.1	20	17	90
Richmond Borough	59	23.0	22.7	6	2	108
Newark, N. J	104	12.0	11.0	16	14	73
Norfolk	31	9.6	13.3	2	4	36
Oakland	43	8.8	15.0	2	10	23
Oklahoma City	23	11.2	6.0	3	1	
Omaha	66	16.3	16.0	6	6	58
Paterson	46	16.9	15.6	8	3	134
Philadelphia	619	16.3	15.0	65	63	82
Pittsburgh	194	16.0	19.3	26	43	91
Portland, Oreg	71	13.1	13.1	7	7	72
Providence	76	16.2	17.5	11	16	88
Richmond	65	18.2	15.3	5	17	61
Rochester	70	11.0		5		40
St. Louis	231	14.7	14.1	17	28	
St. Paul	52	11.0	14.3	5	6	43
Salt Lake City [4]	36	14.3	14.6	4	4	63
San Antonio	57	15.0	18.5	7	12	
San Francisco	154	14.4	15.0	7	15	40
Schenectady	17	8.7	10.9	0	3	0
Seattle	71			3	11	31
Somerville	32	16.3	13.5	4	2	107
Spokane	32			2	1	44
Springfield, Mass	44	15.0	11.9	8	1	119
Syracuse	44	12.0	11.1	6	7	75
Tacoma	27	13.5	14.2	2	5	48
Toledo	83	15.1	12.3	7	9	63
Trenton	37	14.6	12.1	7	6	114
Washington, D. C	153	16.0	16.1	26	22	146
Waterbury	21			4	2	88
Wilmington, Del	27	11.5	12.6	4	3	91
Yonkers	31	14.5	10.5	4	2	88
Youngstown	35	11.4	12.4	8	4	101

[4] Deaths for week ended Friday, Jan. 30, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended February 7, 1925

ALABAMA

	Cases
Chicken pox	37
Diphtheria	33
Dysentery	5
Influenza	643
Influenza reported as "Devil's grip"	3
Lethargic encephalitis	1
Malaria	9
Measles	43
Mumps	74
Ophthalmia neonatorum	2
Pellagra	4
Pneumonia	175
Scarlet fever	16
Smallpox	238
Tuberculosis	52
Typhoid fever	2
Whooping cough	3

ARIZONA

Chicken pox	9
Diphtheria	2
Measles	74
Mumps	31
Scarlet fever	11
Smallpox	7
Tuberculosis	2
Typhoid fever	4

ARKANSAS

Cerebrospinal meningitis	1
Chicken pox	55
Diphtheria	14
Influenza	337
Malaria	25
Measles	50
Mumps	26
Pellagra	6
Scarlet fever	37
Smallpox	25
Trachoma	5
Tuberculosis	6
Typhoid fever	13
Whooping cough	7

CALIFORNIA

	Cases
Cerebrospinal meningitis—San Francisco	1
Diphtheria	140
Influenza	65
Leprosy—San Francisco	1
Lethargic encephalitis:	
Sonoma County	1
San Diego	1
San Francisco	1
Measles	37
Poliomyelitis:	
Oakland	1
Tulare	1
Scarlet fever	142
Smallpox:	
Kern County	9
Los Angeles	37
San Diego	37
San Francisco	19
Oakland	12
Scattering	52
Typhoid fever	8

COLORADO

(Exclusive of Denver)

Cerebrospinal meningitis	1
Chicken pox	99
Diphtheria	13
Impetigo contagiosa	1
Influenza	9
Measles	11
Mumps	32
Pneumonia	19
Scarlet fever	46
Smallpox	2
Tuberculosis	40
Typhoid fever	3
Whooping cough	16

CONNECTICUT

Chicken pox	107
Diphtheria	56
German measles	23

CONNECTICUT—continued	Cases
Influenza	6
Lethargic encephalitis	2
Measles	74
Mumps	25
Pneumonia (all forms)	115
Poliomyelitis	1
Scarlet fever	201
Trachoma	1
Trichinosis	1
Tuberculosis (all forms)	30
Typhoid fever	16
Whooping cough	43

DELAWARE

Diphtheria	3
Measles	1
Mumps	5
Pneumonia	2
Scarlet fever	9
Tuberculosis	29
Whooping cough	4

DISTRICT OF COLUMBIA

Chicken pox	27
Diphtheria	19
Influenza	3
Measles	7
Pneumonia	37
Scarlet fever	34
Smallpox	4
Tuberculosis	28
Typhoid fever	1
Whooping cough	7

FLORIDA

Diphtheria	9
Influenza	15
Malaria	7
Pneumonia	2
Scarlet fever	3
Typhoid fever	6

GEORGIA

Chicken pox	27
Diphtheria	7
Hookworm disease	11
Influenza	183
Malaria	3
Mumps	57
Pneumonia	43
Scarlet fever	11
Smallpox	16
Tuberculosis	26
Typhoid fever	3
Whooping cough	7

ILLINOIS

Cerebrospinal meningitis—Cook County	1
Diphtheria:	
Cook County	82
Scattering	46
Influenza	33
Lethargic encephalitis:	
Cook County	1
Fayette County	1
Knox County	1
McHenry County	1

ILLINOIS—continued	Cases
Measles	471
Pneumonia	333
Scarlet fever:	
Cook County	340
Kane County	13
Logan County	8
McLean County	12
Madison County	11
Peoria County	15
St. Clair County	8
Sangamon County	8
Schuyler County	20
Will County	11
Scattering	99
Smallpox.	
Alexander County	22
Madison County	29
St. Clair County	19
Scattering	35
Tuberculosis	275
Typhoid fever	13
Whooping cough	279

INDIANA

Chicken pox	178
Diphtheria	51
Influenza	121
Measles	204
Mumps	15
Pneumonia	44
Scarlet fever:	
Allen County	10
Clark County	22
Elkhart County	17
Lake County	14
Laporte County	10
Marion County	8
Montgomery County	8
Parke County	16
Randolph County	8
St Joseph County	20
Vigo County	14
Scattering	77
Smallpox.	
Cass County	11
Marion County	8
Tippecanoe County	11
Vigo County	16
Scattering	40
Trachoma	4
Tuberculosis	32
Typhoid fever	2
Whooping cough	28

IOWA

Diphtheria	21
Scarlet fever	53
Smallpox	24

KANSAS

Cerebrospinal meningitis	2
Chicken pox	160
Diphtheria	58
German measles	1
Influenza	8
Measles	5
Mumps	424

KANSAS—continued	Cases
Pneumonia	71
Scarlet fever	137
Smallpox	17
Tuberculosis	53
Typhoid fever	1
Whooping cough	55

LOUISIANA	
Diphtheria	31
Influenza	50
Malaria	4
Measles	18
Pneumonia	34
Poliomyelitis	1
Scarlet fever	15
Smallpox	83
Tuberculosis	20
Typhoid fever	16

MAINE	
Chicken pox	84
Diphtheria	4
German measles	3
Influenza	10
Measles	7
Mumps	102
Pneumonia	10
Poliomyelitis	2
Scarlet fever	10
Septic sore throat	3
Tuberculosis	25
Typhoid fever	8
Vincent's angina	1
Whooping cough	2

MARYLAND[1]	
Cerebrospinal meningitis	1
Chicken pox	86
Diphtheria	34
German measles	1
Influenza	113
Lethargic encephalitis	1
Measles	66
Mumps	35
Pneumonia (all forms)	148
Scarlet fever	121
Septic sore throat	6
Tuberculosis	34
Typhoid fever	5
Typhus fever	1
Whooping cough	83

MASSACHUSETTS	
Actinomycosis	1
Cerebrospinal meningitis	2
Chicken pox	239
Conjunctivitis (suppurative)	16
Diphtheria	106
German measles	368
Influenza	62
Lethargic encephalitis	3
Measles	429
Mumps	118
Ophthalmia neonatorum	28
Pneumonia (lobar)	178
Scarlet fever	349

[1] Week ended Friday.

MASSACHUSETTS—continued	Cases
Septic sore throat	6
Trichinosis	3
Tuberculosis (all forms)	142
Typhoid fever	10
Whooping cough	119

MICHIGAN	
Diphtheria	93
Measles	140
Pneumonia	141
Scarlet fever	302
Smallpox	20
Tuberculosis	40
Typhoid fever	8
Whooping cough	116

MINNESOTA	
Chicken pox	159
Diphtheria	67
Influenza	3
Measles	14
Pneumonia	2
Scarlet fever	257
Smallpox	45
Trachoma	1
Tuberculosis	47
Typhoid fever	6
Whooping cough	33

MISSISSIPPI	
Diphtheria	13
Influenza	485
Scarlet fever	10
Smallpox	22
Typhoid fever	7

MISSOURI (Exclusive of Kansas City)	
Cerebrospinal meningitis	1
Chicken pox	83
Diphtheria	81
Influenza	41
Measles	5
Mumps	24
Pneumonia	6
Scarlet fever	197
Smallpox	22
Trachoma	2
Tuberculosis	37
Typhoid fever	3
Whooping cough	21

MONTANA	
Diphtheria	10
Scarlet fever	29
Smallpox	25
Typhoid fever	1

NEW JERSEY	
Anthrax	1
Chicken pox	175
Diphtheria	106
Influenza	20
Measles	127
Pneumonia	175

NEW JERSEY—continued	Cases
Scarlet fever	292
Smallpox	2
Typhoid fever	11
Whooping cough	219

NEW MEXICO	
Chicken pox	31
Diphtheria	2
German measles	1
Influenza	18
Measles	9
Mumps	10
Pellagra	1
Pneumonia	12
Scarlet fever	8
Smallpox	1
Tuberculosis	10
Typhoid fever	2
Whooping cough	1

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	4
Diphtheria	105
Influenza	93
Lethargic encephalitis	5
Measles	277
Pneumonia	312
Poliomyelitis	2
Scarlet fever	338
Smallpox	4
Typhoid fever	35
Whooping cough	232

NORTH CAROLINA	
Cerebrospinal meningitis	1
Chicken pox	201
Diphtheria	44
German measles	1
Measles	13
Poliomyelitis	1
Scarlet fever	35
Smallpox	72
Typhoid fever	1
Whooping cough	134

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Diphtheria	17
Influenza	433
Pneumonia	180
Smallpox:	
Sequoyah County	8
Scattering	9
Typhoid fever	9

OREGON	
Chicken pox	35
Diphtheria:	
Portland	8
Scattering	19
Influenza	5
Lethargic encephalitis	1
Measles	2
Mumps	10
Pneumonia	7

OREGON—continued	Cases
Poliomyelitis	1
Scarlet fever:	
Portland	10
Scattering	25
Smallpox:	
Portland	16
Scattering	10
Tuberculosis	10
Typhoid fever	7
Whooping cough	3

SOUTH DAKOTA	
Chicken pox	51
Diphtheria	2
Measles	1
Mumps	1
Pneumonia	5
Scarlet fever	57
Smallpox	8
Tuberculosis	1
Typhoid fever	5
Whooping cough	6

TEXAS	
Cerebrospinal meningitis	4
Chicken pox	192
Dengue	13
Diphtheria	87
Dysentery (epidemic)	4
Influenza	4,608
Lethargic encephalitis	3
Measles	171
Mumps	116
Ophthalmia neonatorum	2
Paratyphoid fever	4
Pellagra	30
Pneumonia	390
Poliomyelitis	4
Rabies (human)	5
Scarlet fever	67
Smallpox	132
Tetanus	2
Trachoma	7
Tuberculosis	99
Typhoid fever	22
Whooping cough	151

VERMONT	
Chicken pox	63
Diphtheria	4
Measles	3
Mumps	105
Scarlet fever	15
Whooping cough	72

VIRGINIA	
Smallpox—Fairfax County	1

WASHINGTON	
Chicken pox	151
Diphtheria	53
German measles	65
Lethargic encephalitis	1
Measles	14
Mumps	101
Pneumonia	3
Poliomyelitis:	
Garfield County	1
Whatcom County	1

WASHINGTON—continued

	Cases
Scarlet fever	69
Smallpox	59
Tuberculosis	67
Typhoid fever	9
Whooping cough	24

WEST VIRGINIA

Cerebrospinal meningitis—Morgantown	1
Diphtheria	6
Scarlet fever	6
Smallpox	4
Typhoid fever	13

WISCONSIN

Milwaukee.	
Chicken pox	40
Diphtheria	17
German measles	223
Measles	268
Mumps	47
Pneumonia	11
Poliomyelitis	1
Scarlet fever	8
Smallpox	4
Whooping cough	22

WISCONSIN—continued

	Cases
Scattering:	
Cerebrospinal meningitis	3
Chicken pox	223
Diphtheria	28
German measles	16
Influenza	59
Measles	110
Mumps	122
Pneumonia	21
Scarlet fever	158
Smallpox	43
Trachoma	1
Tuberculosis	29
Typhoid fever	3
Whooping cough	94

WYOMING

Chicken pox	8
Diphtheria	1
Impetigo contagiosa	1
Influenza	1
Mumps	2
Pneumonia	7
Scarlet fever	5

Reports for Week Ended January 31, 1925

DISTRICT OF COLUMBIA

	Cases
Chicken pox	37
Diphtheria	21
Influenza	1
Lethargic encephalitis	1
Measles	6
Pneumonia	38
Scarlet fever	29
Smallpox	1
Tuberculosis	31
Typhoid fever	2
Whooping cough	11

NORTH DAKOTA

	Cases
Cerebrospinal meningitis	1
Chicken pox	20
Diphtheria	5
German measles	3
Mumps	7
Pneumonia	24
Scarlet fever	75
Smallpox	14
Trachoma	4
Tuberculosis	3
Whooping cough	2

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
December, 1924										
Hawaii		27	57		8			1		12
Minnesota	2	402	10		65		3	986	554	17
Utah	4	42	113		187			75	5	7
January, 1925										
Massachusetts	11	578	175		1,321		10	1,684		46

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended January 24, 1925:

Los Angeles, Calif.

Week ended January 24, 1925:	
Number of rats examined	3, 360
Number of rats found to be plague infected	3
Number of squirrels examined	95
Number of squirrels found to be plague infected	0
Totals to January 24, 1925:	
Number of rats examined	38, 173
Number of rats found to be plague infected	78
Number of squirrels examined	1, 519
Number of squirrels found to be plague infected	0

Oakland, Calif.

Week ended January 24, 1925:	
Number of rats trapped	2, 599
Number of rats found to be plague infected	1
Totals January 1–24, 1925:	
Number of rats trapped	4, 277
Number of rats found to be plague infected	13

New Orleans, La.

Week ended January 24, 1925:	
Number of vessels inspected	251
Number of inspections made	878
Number of vessels fumigated with cyanide gas	35
Number of rodents examined for plague	4, 370
Number of rodents found to be plague infected	0
Totals to January 24, 1925:	
Number of rodents examined	22, 385
Number of rodents found to be plague infected	12

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended January 24, 1925, 34 States reported 1,631 cases of diphtheria. For the week ended January 26, 1924, the same States reported 2,656 cases of this disease. One hundred and four cities, situated in all parts of the country and having an aggregate population of nearly 28,800,000, reported 902 cases of diphtheria for the week ended January 24, 1925. Last year, for the corresponding week, they reported 1,377 cases. The estimated expectancy for these cities was 1,231 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Twenty-nine States reported 2,115 cases of measles for the week ended January 24, 1925, and 14,092 cases of this disease for the week ended January 26, 1924. One hundred and four cities reported 1,173 cases of measles for the week this year, and 5,570 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 34 States—this year, 4,186 cases, last year, 4,340; 104 cities—this year, 2,041, last year, 1,884; estimated expectancy, 1,071 cases.

Smallpox.—For the week ended January 24, 1925, 34 States reported 1,224 cases of smallpox. Last year, for the corresponding week, they reported 1,096 cases. One hundred and four cities reported smallpox for the week as follows: 1925, 388 cases; 1924, 382 cases; estimated expectancy, 86 cases. These cities reported 27 deaths from smallpox for the week this year, 16 occurring at Minneapolis.

Typhoid fever.—Two hundred and seventy cases of typhoid fever were reported for the week ended January 24, 1925, by 33 States. For the corresponding week of 1924 the same States reported 202 cases. One hundred and four cities reported 94 cases of typhoid fever for the week this year, and 68 cases for the week last year. The estimated expectancy for these cities was 51 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 104 cities as follows: 1925, 1,256 deaths; 1924, 1,074 deaths.

City reports for week ended January 24, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	6	2	11	0	0	1	61	5
New Hampshire.									
Concord	22,408	0	0	0	0	0	0	0	1
Nashua	29,234	0	0	0	0	0	12	0	1
Vermont:									
Barre	[1] 10,008	1	0	0	0	0	0	13	0
Burlington	23,613	3	0	1	0	0	1	4	1
Massachusetts.									
Boston	770,400	48	70	19	17	1	135	11	40
Fall River	120,912	3	6	1	0	0	0	0	3
Springfield	144,227	6	4	7	2	1	50	9	2
Worcester	191,927	36	6	12	1	0	2	0	2
Rhode Island:									
Pawtucket	68,799	0	2	0	0	1	0	0	4
Providence	242,378	0	13	0	6	0	3	0	10
Connecticut:									
Bridgeport	[1] 143,555	1	9	6	0	0	0	0	3
Hartford	[1] 138,036	4	8	12	0	0	0	5	6
New Haven	172,967	27	4	1	1	1	9	0	11
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	26	26	7	2	4	36	15	5
New York	5,927,625	199	229	221	63	24	35	25	254
Rochester	317,867	10	9	1	0	0	9	30	9
Syracuse	184,511	11	9	7	0	0	1	18	6
New Jersey:									
Camden	124,157	8	5	5	1	1	8	0	7
Newark	438,699	41	24	6	6	0	35	10	9
Trenton	127,390	2	7	3	0	0	21	0	7
Pennsylvania:									
Philadelphia	1,922,788	103	76	82		0	98	19	99
Pittsburgh	613,442	59	27	13		1	126	21	66
Reading	110,917	14	5	1	0	0	1	7	0
Scranton	140,636	1	6	2	0	0	2	0	10

[1] Population Jan. 1, 1920.

City reports for week ended January 24, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	13	12	6		3	1	7	19
Cleveland	888,519	123	35	26	9	3	5	10	20
Columbus	261,082	14	6	0		2	0	2	11
Toledo	268,338	15	7	6		2	13	2	6
Indiana:									
Fort Wayne	93,573	11	4	3	0	0	2	0	1
Indianapolis	342,718	43	17	4	0	1	6	11	8
South Bend	76,709	5	1	3	0	0	4	0	1
Terre Haute	68,939	6	2	1	0	0	0	1	3
Illinois:									
Chicago	2,886,121	130	131	73	8	11	275	20	75
Cicero	55,968	0	2	1	0	0	5	1	1
Peoria	79,675	16	1	1	0	0	0	2	3
Springfield	61,833	5	2	3	1	0	1	27	0
Michigan:									
Detroit	995,668	64	74	34	11	1	3	10	48
Flint	117,968	8	10	1	1	0	0	1	0
Grand Rapids	145,947	7	4	2	0	1	20	0	1
Wisconsin:									
Madison	42,519	19	1	0	0	0	1	107	1
Milwaukee	484,595	59	23	17	2	2	185	63	0
Racine	64,393	38	1	0	0	0	2	8	2
Superior	[1] 39,671	0	1	1	0	0	1	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	23	3	0	0	0	1	1	1
Minneapolis	409,125	100	22	16	0	1	2	4	9
St. Paul	241,891	36	15	14	0	0	0	17	8
Iowa:									
Davenport	61,262	1	1	2	0		0	0	
Des Moines	140,923	3	4	5	0		0	0	
Sioux City	79,662	9	2	1	0		0	2	
Waterloo	39,667	2	1	0	0		0		
Missouri:									
Kansas City	351,819	16	11	3	7	7	4	8	15
St. Joseph	78,232	1	4	1	0	0	0	1	4
St. Louis	803,853	47	54	51	0	0	5	5	
North Dakota:									
Fargo	24,841	18	0	0	0	0	0	6	0
Grand Forks	14,547	2	1	2	0		0	0	
South Dakota:									
Aberdeen	15,829	6		0	0		0	0	
Sioux Falls	29,206	1	1	0	0	0	0	0	0
Nebraska:									
Lincoln	58,761	8	3	3	0	0	1	0	1
Omaha	204,382	20	6	2	0	1	0	0	15
Kansas:									
Topeka	52,555	22	2	2	0	0	1	175	0
Wichita	79,261	25	3	4	0	0	0	0	3
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728		2						
Maryland:									
Baltimore	773,580	44	32	26	60	3	0	25	49
Cumberland	32,361		1	2	0	0	0		2
Frederick	11,301		0	0	0	0	0		1
District of Columbia:									
Washington	[1] 437,571	38	20	11	0	0	13		10
Virginia:									
Lynchburg	30,277	6	1	3	0	0	0	26	3
Norfolk	159,089	20	3	2	0	0	0	99	4
Richmond	181,044	3	6	5		4	3	3	14
Roanoke	55,502	5	2	3	0	1	0	0	2
West Virginia:									
Charleston	45,597	5	2	4	0	0	0	1	1
Huntington	57,918	0	1	1	0		0	0	
Wheeling	[1] 56,208	1	2	2	0	0	1	1	4
North Carolina:									
Raleigh	29,171	7	1	0	0	0	0	0	3
Wilmington	35,719	2	0	1	0	1	0	3	3
Winston-Salem	56,230	5	1	1	0	0	0	1	3

[1] Population Jan. 1, 1920.

City reports for week ended January 24, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC—con.									
South Carolina:									
Charleston	71,245	0	2	1	0	0	0	0	4
Columbia	39,688	1	1	0	0	0	0	9	1
Greenville	25,789	0	0	0	0	0	1	0	3
Georgia:									
Atlanta	222,963	2	3	1	3	1	0	0	17
Brunswick	15,937	0	0	0	0	0	0	0	0
Savannah	89,448	0	1	2	2	1	0	10	2
Florida:									
St. Petersburg	24,403	0	0	0	0	0	0	0	3
Tampa	56,050	0	1	1	1	0	0	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	2	0	0	0	0	2	4
Louisville	257,671	5	7	5	0	1	2	0	10
Tennessee:									
Memphis	170,067		6	0		3	3		19
Nashville	121,128	0	2	3		3	8	1	3
Alabama:									
Birmingham	195,901	12	3	6	6	3	0	0	18
Mobile	63,858	4	1	0	1	1	0	2	2
Montgomery	45,383	0	1	0	2	0	0	7	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	5	1	0	0		0	9	
Little Rock	70,916	1	1	2	4	0	0	0	10
Louisiana:									
New Orleans	404,575	6	16	14	9	9	0	0	12
Shreveport	54,590	0		0	0	0	1	0	4
Oklahoma:									
Oklahoma	101,150	1	2	3	10	2	1	0	7
Tulsa	102,018	10	2	2	0		0		
Texas:									
Dallas	177,274	28	7	8	0	2	1	0	15
Galveston	46,877	0	2	0	13	0	0	0	5
Houston	154,970	0	4	8	0	3	0	0	11
San Antonio	184,727	1	1	3	13	4	1	0	14
MOUNTAIN									
Montana:									
Billings	16,927	16	1	0	0	0	0	1	2
Great Falls	27,787	0	1	1	0	0	20	0	1
Helena	[1] 12,037		0	0	0	0	0		0
Missoula	[1] 12,668		1	0	0	0	0		9
Idaho:									
Boise	22,806	0	0	0	0	0	0	0	0
Colorado:									
Denver	272,031	23	12	22	0	1	4	49	21
Pueblo	43,519	28	4	1	0	0	0	7	4
New Mexico:									
Albuquerque	16,648	3	0	0	0	0	0	0	0
Arizona:									
Phoenix	33,899	4		3	1	0	0	0	3
Utah:									
Salt Lake City	126,241	50	3	1	0	0	2	36	6
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	35	5	6	0		2	22	
Spokane	104,573	8	3	8	0		0	0	
Tacoma	101,731	1	2	8	0	0	0	0	4
Oregon:									
Portland	273,621	21	8	21	0	0	0	5	7
California:									
Los Angeles	666,853	53	45	40	11	1	16	19	33
Sacramento	69,950	0	2	1	0	0	0	0	7
San Francisco	539,038	21	27	14	27	2	1	26	7

[1] Population Jan. 1, 1920.

City reports for week ended January 24, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	1	1	0	0	0	0	0	1	1	2	27
New Hampshire:											
Concord	1	4	0	0	0	1	0	0	0	0	7
Nashua	2	12	0	0	0	0	0	0	0	2	5
Vermont:											
Barre	1	1	0	0	0	0	0	0	0	1	4
Burlington	1	2	0	0	0	0	0	0	0	4	8
Massachusetts:											
Boston	52	111	0	0	0	17	1	4	0	26	272
Fall River	3	5	0	0	0	1	0	0	0	7	21
Springfield	8	36	0	0	0	1	0	0	0	3	34
Worcester	11	14	0	0	0	2	1	0	0	3	38
Rhode Island:											
Pawtucket	1	0	0	0	0	0	0	0	0	0	20
Providence	8	11	0	0	0	1	1	3	0	2	69
Connecticut:											
Bridgeport	5	21	0	0	0	1	0	0	0	2	33
Hartford	7	9	0	0	0	3	0	0	0	12	41
New Haven	8	27	0	0	0	3	0	0	0	8	55
MIDDLE ATLANTIC											
New York:											
Buffalo	21	24	0	7	0	8	1	3	1	43	118
New York	182	256	0	0	0	[1] 114	11	25	4	100	1,003
Rochester	11	44	0	0	0	1	0	0	0	1	70
Syracuse	16	7	0	0	0	4	0	1	0	0	48
New Jersey:											
Camden	2	10	0	2	3	2	0	0	0	4	44
Newark	22	35	0	0	0	9	1	1	0	69	119
Trenton	3	5	0	0	0	2	0	0	0	13	48
Pennsylvania:											
Philadelphia	56	189	0	2	1	32	4	6	1	70	563
Pittsburgh	24	68	1	0	0	14	1	3	0	8	230
Reading	2	6	0	0	0	0	0	0	0	14	23
Scranton	5	0	0	0	0	0	0	0	0	3	......
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	10	21	1	11	0	5	1	0	0	1	144
Cleveland	35	18	2	0	0	17	2	0	1	21	202
Columbus	7	15	1	10	0	9	0	0	0	2	88
Toledo	17	13	3	3	0	6	0	1	0	27	63
Indiana:											
Fort Wayne	3	8	1	0	0	0	0	0	0	4	22
Indianapolis	9	3	2	17	0	3	1	0	0	1	106
South Bend	3	7	0	1	0	2	0	0	0	0	14
Terre Haute	2	12	0	11	0	0	0	0	0	0	24
Illinois:											
Chicago	99	247	2	0	0	58	3	10	3	164	718
Cicero	1	4	0	0	0	1	0	0	0	3	5
Peoria	6	7	0	0	0	1	0	0	0	6	28
Springfield	2	1	0	0	0	2	0	0	0	1	16
Michigan:											
Detroit	87	100	4	6	3	17	2	3	2	51	253
Flint	9	18	2	1	0	0	0	0	0	4	15
Grand Rapids	9	23	1	0	0	1	0	2	0	11	39
Wisconsin:											
Madison	3	3	1	0	0	0	0	0	0	3	5
Milwaukee	38	13	1	1	0	6	1	0	0	29	96
Racine	6	2	0	7	0	1	0	0	0	2	19
Superior	2	3	3	0	0	0	0	0	0	0	10

[1] Pulmonary tuberculosis only.

City reports for week ended January 24, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL											
Minnesota:											
Duluth	6	33	1	1	0	1	0	0	0	1	15
Minneapolis	33	87	9	42	16	5	1	2	0	0	105
St. Paul	21	36	10	7	1	0	0	0	0	22	60
Iowa:											
Davenport	2	1	2	1			0	0	1	1	
Des Moines	8	4	3	2			0	0		0	
Sioux City	3	1	1	0			0	0		0	
Waterloo	3	1	1	9			0	0		0	
Missouri:											
Kansas City	14	102	2	3	0	7	0	0	0	4	96
St. Joseph	3	2	1	0	0	1	0	0	0	0	40
St. Louis	29	111	1	8	0	13	1	0	0	2	257
North Dakota:											
Fargo	1	4	0	2	0	0	0	0	0	0	2
Grand Forks	1	0	1	0			0	0		0	
South Dakota:											
Aberdeen		0		0				0		0	
Sioux Falls	2	1	1	0	0	0	0	0	0	0	5
Nebraska:											
Lincoln	3	0	0	0	0	0	1	0	0	1	21
Omaha	5	5	2	14	0	4	0	1	0	1	59
Kansas:											
Topeka	2	1	0	1	0	1	0	0	0	1	10
Wichita	2	4	0	0	0	1	1	0	0	4	30
SOUTH ATLANTIC											
Delaware:											
Wilmington	3		0				0				
Maryland:											
Baltimore	36	32	0	0	0	16	2	1	1	62	259
Cumberland	1	0	0	0	0	0	0	0	0		12
Frederick	0	0	0	0	0	1	0	0	0		2
District of Columbia:											
Washington	20	37	0	2	1	6	1	1	0	7	140
Virginia:											
Lynchburg	0	0	0	0	0	0	0	0	0	1	11
Norfolk	1	1	0	0	0	4	1	0	0	24	
Richmond	5	4	0	0	0	5	0	0	0	2	67
Roanoke	1	3	0	0	0	2	0	0	0	0	16
West Virginia:											
Charleston	1	4	0	2	0	0	0	0	1	0	18
Huntington	0	1	0	1			0	0		0	
Wheeling	1	3	0	0	0	0	0	1	1	2	22
North Carolina:											
Raleigh	1	0	0	8	0	0	0	0	0	0	13
Wilmington	1	0	1	0	0	0	0	0	0	1	10
Winston-Salem	2	1	1	3	0	1	0	0	0	1	17
South Carolina:											
Charleston	1	1	0	0	0	3	0	0	0	0	27
Columbia	1	0	0	0	0	1	0	0	0	0	15
Greenville	1	0	0	3	0	1	0	0	0	0	11
Georgia:											
Atlanta	3	2	1	0	0	6	0	0	0	0	85
Brunswick	0	0	0	0	0	0	0	0	0	0	1
Savannah	1	1	1	0	0	1	1	0	0	1	31
Florida:											
St. Petersburg	0	0	1	0	0	1	0	0	0	0	15
Tampa	1	0	0	0	0	2	1	2	0	1	27

City reports for week ended January 24, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	0	0	0	0	1	0	0	0	2	16
Louisville	5	11	0	5	0	4	0	2	1	3	81
Tennessee:											
Memphis	2	10	1	5	0	5	0	0	0	------	97
Nashville	2	1	0	2	0	0	0	2	0	0	44
Alabama:											
Birmingham	4	10	0	105	0	4	1	0	0	0	62
Mobile	0	0	0	0	0	2	1	0	0	0	35
Montgomery	1	0	0	1	0	0	0	1	0	0	14
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	4	1	1	------	------	0	0	------	0	------
Little Rock	2	4	1	0	0	1	0	1	0	0	------
Louisiana:											
New Orleans	3	26	3	0	0	24	2	4	1	2	162
Shreveport	------	0	------	0	0	3	------	0	0	0	27
Oklahoma:											
Oklahoma	2	0	3	0	0	2	0	0	0	2	34
Tulsa	2	4	1	0	------	------	0	0	------	------	------
Texas:											
Dallas	3	7	1	0	0	2	0	2	0	10	63
Galveston	1	0	0	0	0	1	0	2	0	0	18
Houston	2	1	1	6	0	8	0	0	0	0	63
San Antonio	1	0	0	0	0	10	0	0	0	0	69
MOUNTAIN											
Montana:											
Billings	2	12	0	0	0	0	0	0	0	22	5
Great Falls	1	1	2	4	0	0	1	1	0	0	9
Helena	0	0	0	0	0	1	0	0	0	------	6
Missoula	1	0	1	0	0	0	0	0	0	------	2
Idaho:											
Boise	1	5	0	4	0	0	0	0	0	0	3
Colorado:											
Denver	10	9	2	0	0	12	0	0	1	3	100
Pueblo	2	1	0	0	0	2	0	4	0	0	9
New Mexico:											
Albuquerque	1	1	0	0	0	4	0	0	0	0	9
Arizona:											
Phoenix	------	0	------	0	0	13	------	0	0	0	40
Utah:											
Salt Lake City	3	3	3	1	0	0	0	0	0	2	33
Nevada:											
Reno	0	1	0	1	0	0	0	0	0	0	4
PACIFIC											
Washington:											
Seattle	10	12	2	6	------	------	1	1	------	4	------
Spokane	4	2	5	1	------	------	1	0	------	4	------
Tacoma	3	3	2	0	0	1	0	0	0	0	23
Oregon:											
Portland	5	9	4	10	0	6	1	0	0	4	------
California:											
Los Angeles	15	45	2	59	0	25	2	2	1	44	266
Sacramento	1	0	1	2	0	3	1	0	0	0	35
San Francisco	17	14	1	4	2	10	1	2	1	8	158

City reports for week ended January 24, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, est. expectancy	Cases	Deaths	Cases	Deaths
NEW ENGLAND											
Massachusetts:											
Boston	0	0	6	0	0	0	0	2	0	0	0
Worcester	0	0	1	1	0	0	0	0	0	0	0
Rhode Island:											
Providence	0	0	2	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC											
New York:											
New York	4	2	17	9	0	0	1	5	3	0	0
Pennsylvania:											
Philadelphia	0	0	3	1	0	0	0	0	0	0	0
Scranton	0	1	0	0	0	0	0	0	0	0	0
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	1	1	0	0	0	0	0	0	0	0	0
Cleveland	2	1	2	0	0	0	0	0	0	0	0
Columbus	1	0	0	0	0	0	0	0	0	0	0
Illinois:											
Chicago	0	0	4	2	0	0	0	0	0	0	0
Michigan:											
Detroit	2	0	1	0	0	0	0	1	0	0	0
Wisconsin:											
Milwaukee	0	0	2	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL											
Missouri:											
Kansas City	0	0	0	1	0	0	0	0	0	0	0
St. Louis	1	0	2	0	0	0	0	0	0	0	0
Kansas:											
Topeka	1	0	0	0	0	0	0	0	0	0	0
SOUTH ATLANTIC											
Maryland:											
Baltimore	1	0	2	0	0	0	0	0	0	1	0
Virginia:											
Richmond	0	0	0	0	0	0	0	0	1	0	0
Georgia:											
Atlanta	0	0	0	1	0	0	0	0	0	0	0
Florida:											
St. Petersburg	0	1	0	0	0	0	0	0	0	0	0
EAST SOUTH CENTRAL											
Kentucky:											
Louisville	1	1	0	0	0	0	0	0	0	0	0
Tennessee:											
Nashville	0	0	0	0	0	1	0	0	0	0	0
WEST SOUTH CENTRAL											
Louisiana:											
Shreveport	0	0	0	0	0	1	------	0	0	0	0
Texas:											
Galveston	0	0	0	0	0	1	0	0	0	0	0
Houston	0	0	0	0	0	2	0	0	0	0	0
MOUNTAIN											
Montana:											
Helena	0	1	0	0	0	0	0	0	0	0	
Arizona:											
Phoenix	0	0	0	1		0	------	0	0	0	
Utah:											
Salt Lake City	1	3	0	0		0	0	0	0	0	
Nevada:											
Reno	0	0	0	0			0	1	0	0	
PACIFIC											
California:											
Los Angeles	3	1	1	1		0	1	0	0	0	
San Francisco	0	0	1	0	0	0	0	1	0	0	

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended January 24, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, November 16, 1924, to January 24, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24
Total	201	175	[2] 190	[3] 193	[4] 197	150	[4] 155	169	[5] 172	[5] 163
New England	209	166	258	[3] 208	221	189	258	256	179	171
Middle Atlantic	159	144	170	175	187	149	140	181	188	175
East North Central	168	173	165	167	185	134	151	132	141	130
West North Central	332	307	309	265	299	168	176	143	255	199
South Atlantic	262	260	[6] 173	201	150	134	146	173	[5] 106	[5] 138
East South Central	183	120	[7] 98	97	149	51	91	120	91	80
West South Central	209	125	144	209	195	116	148	144	195	162
Mountain	258	162	172	315	248	209	191	239	153	239
Pacific	281	128	252	273	[4] 207	226	[4] 120	194	206	223

MEASLES CASE RATES

	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24
Total	72	66	[2] 112	[3] 128	[4] 143	105	[4] 158	215	[5] 141	[5] 213
New England	122	147	164	[3] 282	194	278	380	395	440	497
Middle Atlantic	78	79	105	120	115	235	121	169	157	187
East North Central	97	85	199	207	317	138	294	417	127	379
West North Central	29	10	25	35	19	10	10	19	12	27
South Atlantic	22	14	[6] 22	39	24	35	53	83	[5] 43	[5] 38
East South Central	11	0	[7] 0	6	11	0	17	29	46	74
West South Central	5	9	0	0	19	14	9	5	23	14
Mountain	38	29	19	48	57	19	115	134	267	248
Pacific	99	52	136	125	[4] 37	70	[4] 83	194	160	55

SCARLET FEVER CASE RATES

	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24
Total	223	232	[2] 270	[3] 312	[4] 314	244	[4] 297	369	[5] 355	[5] 370
New England	385	437	544	[3] 602	552	512	609	661	561	596
Middle Atlantic	185	197	197	260	268	225	286	324	294	326
East North Central	225	228	257	234	311	230	243	383	375	369
West North Central	473	508	616	626	601	468	527	757	755	804
South Atlantic	146	128	[6] 171	252	213	132	203	160	[5] 243	[5] 189
East South Central	97	57	[7] 162	109	240	126	172	229	163	183
West South Central	65	93	125	162	185	65	83	148	116	195
Mountain	229	143	296	162	239	191	162	382	534	305
Pacific	174	168	197	218	[4] 134	133	[4] 138	189	183	220

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Norfolk, Va., and Memphis, Tenn., not included in calculating the rate. Reports not received at time of going to press.
[3] Worcester, Mass., not included.
[4] Los Angeles, Calif., not included.
[5] Wilmington, Del., not included.
[6] Norfolk, Va., not included.
[7] Memphis, Tenn., not included.

Summary of weekly reports from cities, November 16, 1924, to January 24, 1925—Annual rates per 100,000 population—Continued

SMALLPOX CASE RATES

	Week ended—									
	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24
Total	34	38	[2] 58	[3] 43	[4] 42	41	[4] 40	57	[5] 58	[5] 70
New England	0	0	0	[3] 0	0	0	0	0	0	0
Middle Atlantic	3	5	5	1	2	2	3	3	10	6
East North Central	10	14	10	13	14	20	27	40	39	48
West North Central	176	236	417	255	209	205	129	220	193	180
South Atlantic	12	6	[6] 48	39	22	28	39	30	[5] 64	[5] 38
East South Central	120	74	[7] 204	177	314	183	372	395	217	675
West South Central	28	32	19	14	51	19	32	65	32	32
Mountain	19	10	19	19	29	48	48	29	57	95
Pacific	142	136	113	113	[4] 106	122	[4] 60	148	212	209

TYPHOID FEVER CASE RATES

	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24
Total	24	20	[2] 45	[3] 43	[4] 56	35	[4] 37	36	[5] 21	[5] 17
New England	12	22	30	[3] 16	30	17	25	15	25	20
Middle Atlantic	23	46	71	68	101	57	58	49	21	20
East North Central	11	7	22	32	33	24	28	23	23	11
West North Central	17	4	8	17	15	19	4	6	10	6
South Atlantic	28	30	[6] 56	35	30	37	41	55	[5] 21	[5] 11
East South Central	80	109	[7] 63	57	51	34	40	51	17	29
West South Central	60	37	60	51	56	28	37	70	70	42
Mountain	19	19	10	19	10	0	0	10	0	48
Pacific	46	17	29	17	[4] 14	15	[4] 5	26	6	15

INFLUENZA DEATH RATES

	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24
Total	8	10	[2] 12	[3] 17	[4] 16	15	19	21	[5] 22	[5] 22
New England	5	5	17	[3] 5	15	15	3	17	27	10
Middle Atlantic	9	8	11	22	17	14	21	20	18	20
East North Central	5	11	9	13	9	16	10	16	15	18
West North Central	0	7	4	4	9	7	9	13	2	20
South Atlantic	12	14	[6] 11	22	22	14	26	35	[5] 47	[5] 23
East South Central	11	29	[7] 28	23	23	51	63	46	46	63
West South Central	15	25	31	36	41	15	51	41	87	92
Mountain	38	19	29	29	48	10	38	19	29	10
Pacific	0	8	8	4	[4] 17	12	12	20	12	12

PNEUMONIA DEATH RATES

	Nov. 22	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24
Total	120	130	[2] 153	[3] 159	[4] 172	157	203	192	[5] 215	[5] 211
New England	94	144	127	[3] 109	134	114	174	122	157	216
Middle Atlantic	152	152	188	201	191	178	226	228	260	234
East North Central	90	93	115	125	146	126	165	152	152	142
West North Central	79	74	63	88	68	92	101	90	107	120
South Atlantic	116	169	[6] 191	175	248	205	250	246	[5] 294	[5] 275
East South Central	206	246	[7] 211	217	297	206	303	292	189	320
West South Central	102	107	163	178	163	229	341	260	449	362
Mountain	143	124	210	200	276	219	229	229	248	321
Pacific	86	94	168	135	[4] 86	147	188	184	163	208

[2] Norfolk, Va., and Memphis, Tenn., not included in calculating the rate. Reports not received at time of going to press.
[3] Worcester, Mass., not included.
[4] Los Angeles, Calif., not included.
[5] Wilmington, Del., not included.
[6] Norfolk, Va., not included.
[7] Memphis, Tenn., not included.

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Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

AZORES

Plague—St. Michael Island.—During the period December 14, 1924, to January 3, 1925, 12 cases of plague with 5 deaths were reported on the island of St. Michael, Azores. The occurrence of most of the cases was at five localities situated from 3 to 9 miles from Ponta Delgada.

EGYPT

Plague, 1924.—From December 25 to 31, 1924, five cases of plague were reported in Egypt. During the year 1924, 373 cases of plague and 194 deaths were reported in Egypt. The number of cases for the year 1923 was 1,519. The hospital reports for the year 1924 show the types of the disease as follows: Bubonic, 249 cases, 71 deaths; pneumonic, 5 cases, 5 deaths; septicemic, 33 cases, 31 deaths.

PANAMA CANAL

Communicable diseases—December, 1924.—During the month of December, 1924, communicable diseases were notified in the Canal Zone and at Colon and Panama as follows:

Disease	Canal Zone	Colon	Panama	Nonresident	Total
Chicken pox	2	1	14	2	19
Diphtheria			1		1
Dysentery	1		2		3
Hookworm disease	1	2	34	34	71
Leprosy			1	1	2
Malaria	40	4	3	52	99
Measles	2	1	6	2	11
Mumps	1			1	2
Pneumonia		4	23	10	37
Tuberculosis	2	8	14	11	35
Typhoid fever				1	1
Whooping cough	5	1	1		7

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended February 13, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29–Nov. 1, 1924: Cases, 7; deaths, 6.
India				Nov. 23–Dec. 6, 1924: Cases, 5,609; deaths, 3,433.
Bombay	Nov. 30–Dec. 20	3	3	
Calcutta	Dec. 20–26	5	5	
Madras	Dec. 14–20	7	2	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received During Week Ended February 13, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
St. Michael Island	Nov. 2-Dec. 13	18	8	Previously published.
Do	Dec. 14-Jan. 3	12	5	
Ceylon:				
Colombo	Dec. 14-20	2	1	Rodent plague, 2.
China:				
Nanking	Dec. 21-Jan. 3			Present.
Egypt				Dec. 25-31, 1924: Cases, 5. Jan. 1-Dec. 31, 1924: Cases, 378. Corresponding period, 1923: Cases, 1,519, Jan. 1-8, 1925: Cases, 11; deaths, 4.
Do	Jan. 1-1924-Jan. 1, 1925	377	194	
City—				
Alexandria	do	2	2	First case, Apr. 2; last case, Nov. 26.
Ismailia	do	1	1	July 6-July 6.
Port Said	do	6	4	Apr. 24-Dec 7.
Suez	do	20	13	Jan. 2-Dec 20.
Province—				
Assiout	do	44	35	Apr. 1-Aug. 27..
Behera	do	1	1	Aug. 9.
Beni-Souef	do	4	4	June 21-Dec 25.
Charkieh	do	1	1	Jan 31.
Dakhalia	do	1	1	Oct 1.
Do	Jan. 1-8, 1925	1	1	
Fayoum	Jan 1, 1924-Jan. 1, 1925.	106	33	Feb. 18-July 18.
Gharbia	do	6	2	Apr 21-Sept. 2.
Ghirga	do	10	3	Jan 17-May 13.
Kalioubiah	do	14	4	Jan 6-Dec. 31.
Do	Jan. 1-8, 1925	3		
Kena	Jan. 1, 1924-Jan. 1, 1925.	45	26	Apr 9-Nov. 15.
Menoufieh	do	58	36	Jan. 2-Jan. 1.
Do	Jan. 1-8, 1925	7	3	
Minia	Jan 1, 1924-Jan. 1, 1925.	58	28	Feb. 5-Aug 1.
Gold Coast				Sept 1924 Cases, 37; deaths, 38
India				Nov. 23-Dec. 6, 1924: Cases, 5,203; deaths, 4,197.
Bombay	Dec. 7-20	2	1	
Madras Presidency	Dec. 14-20	161	113	

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Brazil:				
Pernambuco	Dec. 7-20	36	5	
British South Africa:				
Northern Rhodesia	Nov. 25-Dec. 8	12		
Canada:				
British Columbia—				
Victoria	Jan. 18-24	1		
Manitoba—				
Winnipeg	Jan. 25-31	3		
Ontario—				
Hamilton	Jan. 24-30	1		
China:				
Amoy	Dec 14-Jan 3			Present.
Antung	Dec. 22-28	4		
France				July-Oct., 1924: Cases, 61.
Germany				June 29-Nov. 8, 1924: Cases, 7.
Gold Coast				July-Sept., 1924: Cases, 82 deaths, 1.
Greece				Jan.-June, 1924: Cases, 170; deaths, 27.
Do				July-Oct., 1924: Cases, 34; deaths, 25.
India				Nov. 23-Dec. 6, 1924: Cases, 2,396; deaths, 550
Bombay	Nov 30-Dec 20	11	6	
Calcutta	Dec. 14-20	44	24	
Karachi	Dec. 21-27		1	
Madras	Dec. 14-20	20	10	
Italy				June 29-Nov. 8, 1924: Cases, 57.
Java:				
Batavia	Dec 20-26	10	1	Province.
Mexico:				
Tampico	Jan 11-20	2	2	

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received During Week Ended February 13, 1925—Continued

SMALLPOX—Continued.

Place	Date	Cases	Deaths	Remarks
Nigeria				Jan.-June, 1924: Cases, 357; deaths, 87.
Do				July-Sept., 1924: Cases, 6; deaths, 1.
Spain:				
Cadiz	Dec. 1-31		17	
Malaga	Jan. 11-17		5	
Switzerland:				
Lucerne	Dec. 1-31	10		
Syria:				
Aleppo	Jan. 4-10	12	3	
Tunis:				
Tunis	Jan. 8-14	9	12	
Uruguay				Jan.-June, 1924: Cases, 101; deaths, 2.
Do				July, 1924. Cases, 25; deaths, 3.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Bulgaria				Jan.-June, 1924: Cases, 191; deaths, 28
Do				July-Aug. 1924; Cases, 4.
Chosen:				
Seoul	Nov. 1-30	1	1	
Egypt:				
Cairo	Nov. 12-18	1		
France				July-Oct., 1924: Cases, 7.
Greece				May-June, 1924 Cases, 116; deaths, 8.
Do				July-Oct., 1924 Cases, 30; deaths, 4
Lithuania				Aug.-Oct., 1924. Cases, 15; deaths, 1
Palestine:				
Ekron	Dec. 23-29	1		Ramleh District
Jerusalem	do	2		
Poland				Oct. 26-Nov. 1, 1924: Cases, 24, deaths, 2.
Portugal:				
Oporto	Jan. 4-10	1		
Rumania				Jan.-June, 1924. Cases, 2,906, deaths, 328
Do				July, 1924. Cases, 69, deaths, 10.
Russia:				
Leningrad	June 29-Oct. 25	11		
Tunis				July 1-Nov. 20, 1924. Cases, 39.
Turkey:				
Constantinople	Jan. 2-8	1		
Yugoslavia				Aug. 3-Oct. 18, 1924: Cases, 17; deaths, 2.

Reports Received from December 27, 1924, to February 6, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo	Nov. 16-22	1		
India				Oct. 19-Nov. 22, 1924: Cases, 12, 221; deaths, 7,317.
Bombay	Nov. 23-29	1	1	
Calcutta	Oct. 26-Dec. 13	49	41	
Madras	Nov 16-Dec. 13	43	28	
Rangoon	Nov. 9-29	5	2	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 14 deaths, 10.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept. 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov. 30-Dec. 6	1		
Siam:				
Bangkok	Nov. 9-29	4	2	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to February 6, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov 16-Dec. 29	11	1	
Ponta Delgada	Dec. 6-12	9	5	
British East Africa:				
Kenya—				
Uganda	Aug. 1-31	79	62	
Canary Islands.				
Las Palmas				Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec. 26	3	1	Vicinity of Santa Cruz de Teneriffe.
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon.				
Colombo	Nov. 9-Dec. 13	7	7	
China.				
Nanking	Nov. 23-Dec. 6			Present.
Ecuador				
Guayaquil	Nov. 16-Dec. 15	8	3	Rats taken, 17,677; found infected, 33.
Egypt				Jan. 1-Dec. 9, 1924: Cases, 365. Corresponding period, year 1923—cases, 1,462.
City—				
Alexandria	Dec 3-9	1	1	Bubonic.
Port Said	Dec. 1-9	2	1	
Suez	Dec. 3-9	1	1	
Hawaii:				
Honokaa	Nov. 4	1		At Mill Camp, location of Honokaa Sugar Co. Plague-infected rodent found, Dec. 9, 1924, in vicinity of Honokaa village.
India				Oct. 19-Nov. 22, 1924: Cases, 11,803; deaths, 8,700.
Bombay	Nov. 22-29	1	1	
Karachi	Nov. 30-Dec. 6	2	1	
Madras Presidency	Nov. 23-Dec. 6	182	128	
Rangoon	Oct. 26-Dec. 6	13	13	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 25; deaths, 20.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri; epidemic.
Pare	Nov. 29			Do.
Soerabaya	Nov. 16-22	6	4	
West Java—				
Cheribon District	Oct. 14-Nov. 3		14	
Pekalongan District	do		29	
Tegal	Oct. 14-20		3	
Madagascar:				
Tananarive Province				Oct. 16-Nov. 15, 1924: Cases, 83; deaths, 75.
Tananarive Town	Oct. 16-Nov. 15	6	5	
Other localities	do	77	70	Bubonic, pneumonic, septicemic.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Union of South Africa:				
Cape Province—				
De Aar	Nov. 22-29	1		Native.
Dronfield	Dec. 7-13	1		8 miles from Kimberley.
Kimberley	do	1	1	
Maraisburg District	Nov. 22-Dec. 13	4	2	Bubonic, on Goedshoop Farm.
Orange Free State—				
Hoopstad	Dec. 7-13	1		On farm.
Kroonstad	Nov. 22-29	1		Bubonic; mild; from Grandstable Farm, Hoopstad district.
Vredevort	Dec. 7-13	1	1	On farm.
Transvaal:				
Boshof	Dec. 7-13	1	1	On farm.
Wolmaransstad District	Nov. 22-29	1	1	On Farm Wolverspruit, Vaal River. Native.
On vessel:				
S. S. Conde				At Marseille, France, Nov. 6, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to February 6, 1925—Continued

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Bolivia:				
La Paz	Nov. 1-30	12	7	
Brazil:				
Pernambuco	Nov. 9-Dec. 6	37	11	
British South Africa:				
Northern Rhodesia	Oct. 28-Nov. 24	43	2	In natives.
Canada:				
British Columbia—				
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-17	35		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-24	18		
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33.
China:				
Amoy	Nov. 9-Dec. 13			Present.
Antung	Nov. 17-23	1		
Foochow	Nov. 2-Dec. 13			Do.
Hongkong	Nov. 9-Dec 6	5	1	
Shanghai	Dec. 7-27	1	2	
Czechoslovakia				April-June, 1924: Case, 1, occurring in Province of Moravia.
Ecuador:				
Guayaquil	Nov 16-Dec. 15	4		
Egypt:				
Alexandria	Nov 12-Dec 23	9		
Gibraltar	Dec 8-14	1		
Great Britain:				
England and Wales	Nov. 23-Jan. 3	472		
Do	Jan. 4-10	91		
India				Oct. 19 - Nov. 22, 1924: Cases, 4,026; deaths, 883.
Bombay	Nov. 2-29	8	6	
Calcutta	Oct 26-Dec. 13	150	82	
Karachi	Nov. 16-Dec. 20	12	1	
Madras	Nov. 16-Dec. 13	49	20	
Rangoon	Oct. 26-Dec. 6	41	12	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 223; deaths, 76.
Province—				
Anam	Aug. 1-Sept. 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov 16-29	3	2	Including 100 sq. km. of surrounding country.
Tonkin	Aug. 1-Sept. 30	19	7	
Iraq:				
Bagdad	Nov 9-15	1	1	
Jamaica				Nov. 30-Dec. 27, 1924: Cases, 33. Reported as alastrim.
Kingston	Nov. 30-Dec 27	4		Reported as alastrim.
Java:				
East Java—				
Pasoeroean	Nov. 12-19			Epidemic in two native villages.
Do	Oct. 26-Nov. 1	9	1	
Soerabaya	Oct. 19-Nov. 29	484	159	
West Java—				
Province—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov. 14	2		
Cheribon	Oct. 14-Nov. 3	14		
Pekalongan	Oct. 14-Nov. 3	20		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5.
Mexico:				
Durango	Dec. 1-31		5	
Guadalajara	Dec. 23-29		1	
Do	Jan. 6-12		1	
Mexico City	Nov. 23-Dec. 27	5		
Monterey				Jan. 24, 1925: Outbreak.
Salina Cruz	Dec. 1-31	1	1	
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-10	9	3	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan 5-18		9	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Peru:				
Arequipa	Nov. 24-30		1	
Portugal:				
Lisbon	Dec. 7-20	19		
Oporto	Nov. 30-Dec. 27	3	2	

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to February 6, 1925—Continued

SMALLPOX—Continued.

Place	Date	Cases	Deaths	Remarks
Russia				Jan. 1-June 30, 1924: Cases, 9,683.
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Cadiz	Nov. 1-30		34	
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-10		21	
Valencia	Nov. 30-Dec. 6	2		
Switzerland:				
Lucerne	Nov. 1-30	9		
Syria:				
Aleppo	Nov. 23-29	1		
Do	Dec. 21-27	12		Jan. 3-25, 1925: 50 cases present.
Tunis:				
Tunis	Nov. 25-Dec. 29	42	35	
Do	Jan. 1-7	14	17	
Turkey:				
Constantinople	Dec. 13-19	5		
Union of South Africa:				
Cape Province	Nov. 9-29			Outbreaks.
Orange Free State	Nov. 2-8			Do.
Transvaal	Nov. 9-15			Do.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Nov. 1-Dec. 31	5	1	
Bolivia:				
La Paz	do	2		
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Iquique	Nov. 30-Dec. 1		2	
Talcahuano	Nov. 16-Dec. 20		5	
Valparaiso	Nov. 25-Dec. 7		4	
Czechoslovakia				Apr.-June, 1924: Cases 3, occurring in Province of Russinia.
Egypt:				
Alexandria	Dec. 3-9	1	1	
Cairo	Oct. 1-Nov. 11	9	7	
Latvia				Oct. 1-Nov. 30, 1924: Cases, 16.
Mexico:				
Durango	Dec. 1-31		1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal district.
Palestine				Nov. 12-Dec. 8, 1924: Cases, 7.
Peru				
Arequipa	Nov. 24-30		1	
Poland				Sept. 28-Oct. 25, 1924: Cases, 113, deaths, 5.
Rumania:				
Constanza	Dec. 1-10	1		
Russia				Jan. 1-June 30, 1924: Cases, 92,000.
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Turkey				
Constantinople	Nov. 15-Dec. 19	6	1	
Union of South Africa:				
Cape Province	Nov. 9-29			Outbreaks.
East London	Nov. 16-22	1		
Orange Free State	Nov. 9-Dec. 13			Do.
Transvaal	Nov. 9-15			Do.
Yugoslavia:				
Belgrade	Nov. 24-Dec. 7	4		

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1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of diesase. (3) Other pertinent information regarding sanitation and the conservation of the public health.

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PUBLIC HEALTH REPORTS

VOL. 40 February 20, 1925 No. 8

THE VACUUM-CYANIDE METHOD OF DELOUSING CLOTHING AND BAGGAGE

Experimental Data Upon Which the Procedure at the New York Quarantine Station is Based

By H. E. Trimble, Passed Assistant Surgeon, United States Public Health Service

During the early part of the World War it became apparent that the problem of excluding typhus fever from the United States would be largely the problem of excluding European lice from the United States.

The approved method of disinfesting clothing and baggage by steam was not entirely satisfactory. Felt, rubber, leather, fur, and other materials which are frequently made up into clothing, or bags and trunks, which almost invariably have leather, paper and glue about them, are damaged by steam. It required time and labor to open each package, sort out the articles that steam would damage, sterilize the remainder, and repack. Even then, it was known that articles exempted carried lice, and these articles either had to be treated separately by some different process or allowed to pass with nothing done.

The ideal method should kill all animal and insect life within a package that has neither been opened nor unlocked, and do it without damage to the contents. It should also be sufficiently rapid to allow clothing to be disinfested while the owner is taking a bath. With these requirements in mind, Surgeon Grubbs [1] studied the problem at the Boston quarantine station of the Public Health Service, and in 1916 introduced a method of treating clothing and baggage with a vacuum hydrocyanic acid gas process. For this he used a metal sterilizing chamber, created in it a vacuum of from 15 to 17 inches, introduced cyanide gas, and restored atmospheric pressure which forced the gas into the materials. The Department of Agriculture [2] had introduced a similar process to kill bollworms in imported cotton and Assistant Surgeon General Creel and Asst. Surg. F. M. Faget [3] had shown that HCN gas was lethal to body lice.

[1] Public Health Reports, Vol. 31, No. 42, Oct. 20, 1916.
[2] Fed. Hort. Bd. 21, Dec. 4, 1915, and circular of Mar. 16, 1916.
[3] Public Health Reports, June 9, 1916.

In 1921, Surgeon Grubbs came to the New York quarantine station and introduced the vacuum cyanide method. As many as 2,000 persons a day were being landed for disinfestation and there was a special need for a rapid method. As it was realized that previous studies had not been completed, the quarantine station laboratory was directed to determine more exactly the limitations of the vacuum cyanide method or to find something better.

A new battery of double-jacketed steam sterilizing chambers was installed at Hoffman Island and adapted for this method by connecting them up with a motor-driven air pump, capable of giving either a vacuum up to 30 inches of mercury, or a positive pressure of about 25 pounds, within a few minutes. The battery consisted of one chamber of 640 cubic feet capacity and five chambers of 84 cubic feet capacity each, all piped so that each chamber could be individually and quickly connected with either the cyanide generator or the air pump. This was in addition to the usual steam connections. As the immigrants arrived on the dock, they left their baggage and passed on to the bathhouse. The baggage, for the most part unopened, was placed in the large sterilizer. All the clothing worn, including hats, shoes, etc., was put in individual mesh bags and treated in the small sterilizers while the immigrants were bathing. Baggage and clothing were treated alike, but in different sterilizers, as follows: Placed in sterilizers and a vacuum of 15 to 17 inches created, on which HCN was generated from 72 ounces NaCN per 1,000 cubic feet, restored atmospheric pressure and waited 15 minutes. Created a second vaccum of 15 to 17 inches, opened outside air valves to restore atmospheric pressure and kept air pump going for 5 minutes to wash out the gas. This entire process requires from 35 to 40 minutes. Controls of the efficiency of this work soon demonstrated that lice near the center of large bundles were not all being killed.

Many factors had to be considered, such as concentration of the HCN gas, initial vacuum, length of exposure to the gas, and the amount and kind of materials to be penetrated. It was necessary to run a series of experiments that would subject lice and lice ova to all the combinations of these various factors, and it was also desired to try certain other gases.

In planning the experiments it was realized that to arrive at any definite conclusions an abundant supply of lice and fresh ova should be constantly available over a period of several months. The supply of lice obtainable from immigrants was uncertain and far below the number desired for experimentation. Hence, it became necessary to raise them and this was done very succesfsully in the feeding box described by Nuttall and by Wolbach (see Plate I, A). This is a round metal ointment box, the bottom and top of which are almost entirely

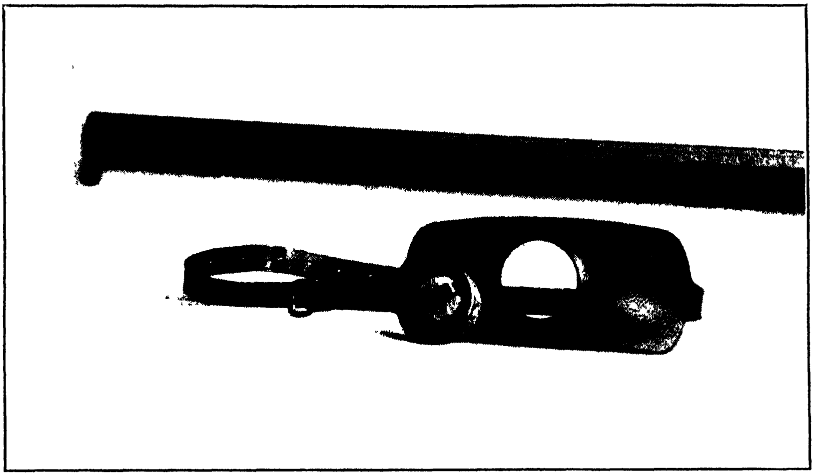
cut out and replaced by silk bolting cloth, 66 strands to the inch, through which lice may feed but not escape. The silk is held in place by strips of adhesive plaster and may be easily replaced when soiled. The lid of the box is also sealed with a strip of adhesive. Strips of thin black felt, upon which the lice might cling and deposit their eggs, are coiled, watch-spring fashion, and placed in the box. Ova are easily seen and counted on black felt, the nap of which is long enough for their easy deposition. A long strip of felt is left in the box continuously to serve as a "nest egg." The strips used for the experiments are replaced by new felt every four days. The ova thus obtained, being less than five days old, are fresh and preclude the possibility of experimenting with any empty hatched egg cases. A wide leather strap is used to bind the box to the surface of the skin.

The lice (*Pediculus humanus* (*vestimenti*)) originally put into the box were obtained from healthy infested immigrants—3 from Ireland, 7 from Greece, 2 from England, and 1 from Italy. The box was worn next to the skin constantly for four weeks before enough lice were present for experimental purposes. After that the box literally teemed with them. At first the irritation to the skin was rather severe; but after a month or so did not cause any especial discomfort. The box was shifted to a different position at least every 12 hours, and it was found that the lice multiplied much faster when the box was worn continuously day and night. After several months the skin areas available for feeding purposes became somewhat thickened and eczematous from the constant irritation—"vagabond skin"—the lice could not feed so well thereon, and multiplication was not so rapid. It was possible, however, for more than a year to obtain from this one box an average of over a hundred lice in different stages of development and a hundred fresh ova every four days. Each time the box was opened, the silk mesh was cleaned or replaced, and the moults and the brown dust-like feces were removed by blowing across the box or dusting it gently with a camel's hair brush.

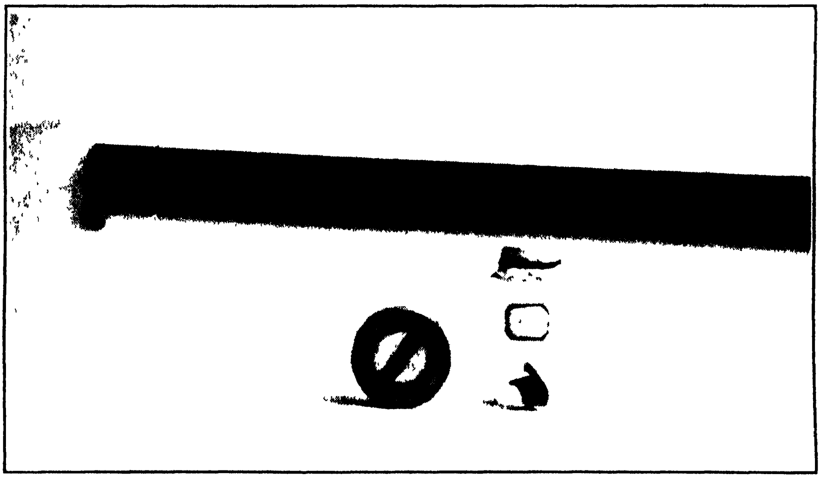
Specimens were prepared shortly before each experiment. When taking the strips of felt out of the feeding box they were cut so as to obtain bits with from 10 to 20 lice and as many eggs for each separate specimen. These bits of felt, with lice and eggs undisturbed, were placed into specimen boxes made of cardboard pill boxes, the top and bottom of which had been replaced with bolting silk (Plate I, B). This allowed free circulation of the gas to the lice, but confined them and protected them from trauma. Care was taken not to subject the specimens to any undue heat or cold, or abrupt changes of temperature. In most of the experiments, in order to give uniform but different degrees of protection, the specimens were put in what was called the "standard bundle." Gray blankets, approximately 75 per cent wool, weighing

4½ pounds each, were used. These blankets were thoroughly aired out during the four-day intervals between experiments. The specimens numbered and recorded, were rolled up in these blankets, in the same manner each time, so that the specimen in the center would have 48 thicknesses of blanket covering it; the others had, successively, 40, 32, 24, 16, and 8 thicknesses covering them. This standard bundle measured about 72 inches by 116 inches around its short and long axes, respectively, and weighed about 40 pounds. In some experiments a specimen was placed, fully exposed, outside of the bundle. One or two specimen boxes for each experiment were not put into the chamber but were kept as controls to check the hatching (the live lice being removed and the ova left). Upon removal from the chamber each specimen was examined immediately, and lice remaining active were removed from the felt. Inactive lice and the ova were left on the bits of felt, dropped into small clean wide-mouthed glass bottles (Plate I, B), covered by cloth, and put into a moderately moist incubator at 30° C. Lice failing to respond by movement of the legs when gently prodded with a fine wire were classified, for practical purposes, as inactive. Lice apparently dead after gassing often recovered activity later. Specimens were examined frequently for several hours, at first. Later the specimens were examined twice daily to remove any lice that had regained activity and to watch for the hatching of ova. Careful records were kept showing all factors of the experiments, such as temperature, amounts of chemicals (concentration of gas), initial vacuum, length of exposure, secondary vacuum, positive air pressure, and amount if used, and the time of the different steps and of the entire process. The serial number of each specimen box showing number of lice and number of ova in each, number of folds of blanket in which wrapped, condition of the lice in each specimen at time of removal from chamber, time and number of lice recovering activity later, and the date and number of ova hatching was also recorded. With the naked eye it was easy to see each newly hatched larva on the black felt. They stayed on the felt closely until about 24 hours old, when they often left it to die. Ova were watched for hatching for 15 days. The egg cases were then examined under a hand lens and the number of empty cases compared with the number of larva recorded as having hatched. In the control specimens (not gassed) usually about 50 per cent of the ova would hatch. In no control did all fail to hatch. That about 30° C., moderately moist, was the best incubating temperature, was confirmed by numerous trials.

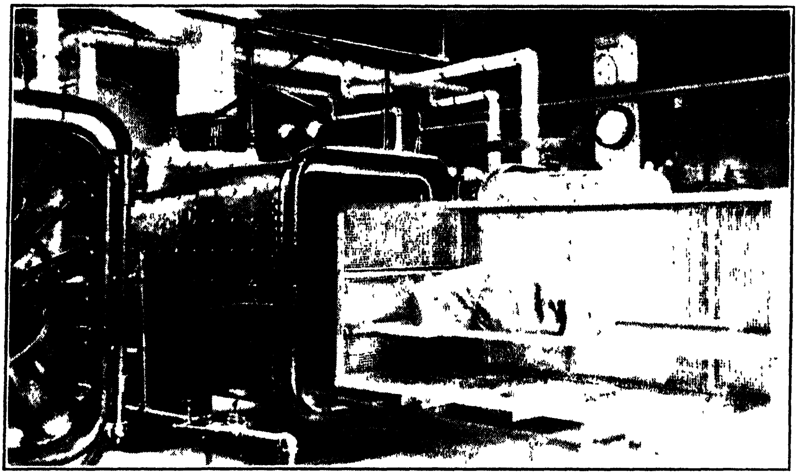
For the generation of hydrocyanic acid gas the chemicals used were (*a*) sodium cyanide, 96 to 98 per cent, containing 51 to 52 per cent cyanogen, used fresh from air-tight cans as received from the manufacturers, (*b*) commercial sulphuric acid, 66° Baumé, and



A Louse feeding box and strap for attaching same to arm or leg

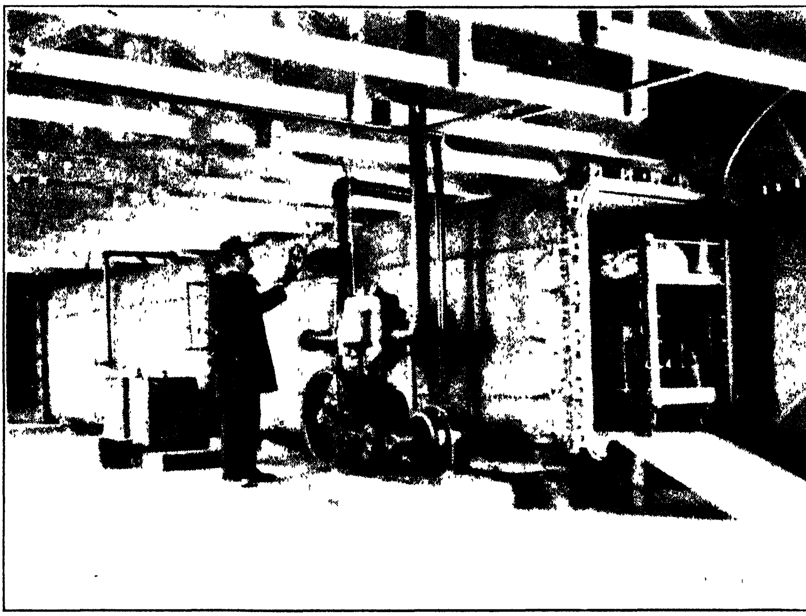


B. Specimen box and bottle



A Small fumigating chamber for clothing, showing the "standard bundle" used in the experiments

B Large baggage fumigating chamber, showing an empty truck



Large baggage fumigating chamber, showing buckets containing acid solution at side of generator and the baggage on a truck

(c) tap water, in proportion of 1 ounce sodium cyanide to 1½ fluid ounces acid and 2 fluid ounces water. The essential steps of the routine, and also the experimental process were as follows: The required amount of dry sodium cyanide was placed in a generator, which had two outlet pipes with valves. One of these pipes was connected with the sterilizers; to one was attached a flexible hose. The acid and water were mixed in a pail. The material to be deloused was placed in the chamber, the doors were tightly closed, and the air was exhausted to the desired degree by the motor-driven pump. The flexible hose was then placed in the diluted acid, the valve to the air pump closed and that to the generator opened. This drew the acid into the generator containing the sodium cyanide. The gas generated rapidly and was drawn immediately over into the sterilizing chamber. Generation was usually completed in less than 3 minutes. A valve was then opened to break the vacuum to atmospheric pressure; the violent inrush of air was sufficient to thoroughly stir the gas to uniform diffusion. The valve was then closed. In some of the experiments, positive air pressure was now obtained, the idea being to further force the gas into the mass of fabrics. After the desired time of exposure, the gas was exhausted by the vacuum pump and expelled through a pipe leading out through the roof. This secondary vacuum was then broken and the vacuum pump allowed to run for from 5 to 7 minutes with an outside valve to the chamber open. The secondary vacuum and flow of fresh air from bottom to top of chamber was to wash out the gas before removing the material. In cold weather sufficient steam was admitted to the jacket of the chamber to warm the interior sufficiently to prevent chilling the specimens. The temperature could be determined by watching a thermometer extending into the interior.

This experimental work extended over a period of more than a year, but without interfering with the routine duties of the worker. About 175 tests were made, including many which were repeated one or more times. Approximately 700 specimen boxes, with 10,000 lice and as many fresh-laid ova, were used. The majority of the tests were made with the cyanide gases under all conceivable variations of the factors involved and under varying atmospheric conditions. In general, quite consistent results were obtained, the degree of penetration of gas with lethal effect being fairly uniform under similar conditions, and varying regularly as conditions were varied. In fact, it became possible toward the end of the work to predict with almost mathematical exactness just what results would ensue if lice and ova were subjected to any certain combination of factors. Rarely were "freak" results obtained, such as finding one louse alive after being fully exposed to a high concentration for considerable time.

VACUUM AND PRESSURE

To determine what effect would be produced on lice and ova by factors other than the gas, a series of experiments was run without gas (Table 1). The first two experiments approximated closely the usual steps in the routine delousing process and in the experimental tests. The results show that the vacuum and air pressure used later in the gas experiments had, *per se*, no effect on lice or lice ova.

TABLE 1.—*Showing effect of vacuum and pressure on lice and lice ova*

Experiment No.	Procedure	Results
1	Initial vacuum 18 inches obtained in 2 minutes; held 3 minutes; broken to 0 (atmospheric pressure) and held 15 minutes Second vacuum 18 inches obtained in 2 minutes; broken and air pumped through chamber for 7 minutes.	All lice active; ova hatched.
2	Initial vacuum 26 inches obtained in 2½ minutes; held 3 minutes; broken to 0 and held 30 minutes. Second vacuum 26 inches obtained in 2½ minutes; broken and air pumped through chamber for 7 minutes.	All lice active; ova hatched.
3	6 alternate vacuums of 26 inches obtained and broken to 0 within period of 27 minutes.	All lice active, ova hatched.
4	Initial vacuum 22 inches held for 3 minutes, then broken to 0; air pressure 15 pounds obtained and held for 15 minutes, then broken to 0. Second vacuum 22 inches obtained and held for 3 minutes, then broken to 0.	All lice active, ova hatched.
5	Initial vacuum 26 inches held for 3 minutes; broken; air pressure 15 pounds obtained and held for 30 minutes; broken; second vacuum 26 inches obtained and held 3 minutes, then broken.	All lice active; ova hatched. (During the 30 minutes the pressure fell to 12 pounds)
6	Initial vacuum of 26 inches obtained; broken to 0, 15 pounds air pressure obtained; broken to 0—this done for 6 alternate vaccuums and air pressures over a period of 60 minutes.	All lice active; ova hatched

HYDROCYANIC ACID GAS

Table 2 gives merely a few representative experiments, selected and arranged in such an order as to show the effects of hydrocyanic acid gas, from the amount sublethal to fully exposed lice in 15 minutes, up through varying and increasing concentrations of gas, vacuums, and pressures, lengths of exposure, degrees of protective covering to the specimens, etc., to beyond the highest practical in routine delousing work. Only the essential data are given, the details as to number of lice and ova, days of incubation before hatching, amount of secondary vacuum, etc., being omitted for the sake of brevity and simplicity. Interspersed are several practical tests made with clothing and baggage of immigrants in the course of actual delousing. A comparison of the way the specimens were wrapped or protected in clothing or baggage, and the results in these tests, with the wrapping and results in the experimental "standard bundle" tests, is interesting.

TABLE 2.—*Showing effect of hydrocyanic acid gas on lice and lice ova*

Experiment No.	Sodium cyanide; ounces per 1,000 cubic feet	Specimen No.	Degree of protection of specimen; how wrapped	Initial vacuum in inches	Followed by pressure in pounds	Time of exposure at 0 (or under pressure) (minutes)	Total time in chamber (minutes)	Condition of lice upon removal from chamber	Condition of lice later	Ova hatching at 30° C.
1	4.76	1	Fully exposed	26		120	139	All inactive	Part revived	Part hatched.
		2	do	26		120	139	do	do	Do.
2	5.95	1	Fully exposed	26		15	27	Part active	Part revived	Part hatched.
		2	do	26		15	27	do	do	Do.
3	11.9	1	Fully exposed	26		15	27	All inactive	Part revived	Part hatched.
		2	do	26		15	27	do	do	Do.
4	17.9	1	Fully exposed	26		15	29	All inactive	None revived.	Part hatched.
5	23.8	1	Fully exposed	18		15	28	All inactive	None revived.	None hatched.
		2	do	18		15	28	do	do	Do.
6	31.3	1	Fully exposed	18		15	29	All inactive	None revived.	None hatched.
		2	4 folds blanket					do	do	Do.
		3	16 folds blanket					Part active	All revived	Part hatched.
		4	32 folds blanket					All active		Do.
7	31.3	1	8 folds blanket in center of pile of mesh bags.	18		15	27	Part active	All revived	Part hatched.
8	31.3	1	8 folds blanket in leather valise.	18		15	27	All inactive	All revived	Part hatched.
		2	16 folds blanket in leather valise.					Part active	do	Do.
9	60	1	Fully exposed	26		105	126	All inactive	None revived.	None hatched.
		2	16 folds blanket					do	do	Do.
		3	24 folds blanket					do	Part revived	Do.
		4	32 folds blanket					Part active	Part revived	Part hatched.
		5	40 folds blanket					do	do	Do.
		6	48 folds blanket					do	All revived	Do
		7	56 folds blanket					All active	do	Do.
10	71.8	1	Fully exposed	0		15	21	All inactive	None revived.	None hatched.
		2	8 folds blanket					Part active	All revived	Part hatched.
		3	16 folds blanket					All active		Do.
		4	24 folds blanket					do		Do.
		5	32 folds blanket					do		Do.
11	71.8	1	Fully exposed	0		60	72	All inactive.	None revived.	None hatched
		2	8 folds blanket					do	Part revived.	Do.
		3	16 folds blanket					Part active	do	Do.
		4	24 folds blanket					do	All revived	Do.
		5	32 folds blanket					All active		Part hatched.
		6	40 folds blanket					do		Do.
12	71.8	1	8 folds blanket	18		15	27	All inactive.	Part revived.	None hatched.
		2	16 folds blanket					Part active	All revived	Do
		3	24 folds blanket					All active		Part hatched.
		4	32 folds blanket					do		Do
		5	40 folds blanket					do		Do.
		6	48 folds blanket					do		Do.
13	71.8	1	8 folds blanket in center of pile of 21 mesh bags.	18		15	25	Part active	All revived	Part hatched.
14	71.8	1	Wrapped in clothing in mesh bag. Bag in center of pile of 45 mesh bags.	18		15	27	Part active	All revived	Part hatched.
15	71.8	1	8 folds blanket	26		15	28	All inactive	Part revived	None hatched.
		2	16 folds blanket					Part active	do	Do.
		3	24 folds blanket					All active		Part hatched.
		4	32 folds blanket					do		Do.
		5	40 folds blanket					do		Do.
		6	48 folds blanket					do		Do.

TABLE 2.—*Showing effect of hydrocyanic acid gas on lice and lice ova*—Continued

Experiment No.	Sodium cyanide; ounces per 1,000 cubic feet	Specimen No.	Degree of protection of specimen; how wrapped	Initial vacuum in inches	Followed by pressure in pounds	Time of exposure at 0 (or under pressure) (minutes)	Total time in chamber (minutes)	Condition of lice upon removal from chamber	Condition of lice later	Ova hatching at 30° C.
16	71.8	1	8 folds blanket	26		30	44	All inactive	None revived	None hatched.
		2	16 folds blanket					do	do	Do.
		3	24 folds blanket					Part active	Part revived	Do.
		4	32 folds blanket					do	All revived	Do.
		5	40 folds blanket					All active		Part hatched.
		6	48 folds blanket					do		Do.
17	71.8	1	8 folds blanket	26	15	15	35	All inactive	None revived	None hatched.
		2	16 folds blanket					do	Part revived	Do.
		3	24 folds blanket					Part active	do	Part hatched.
		4	32 folds blanket					All active		Do.
		5	40 folds blanket					do		Do.
		6	48 folds blanket					do		Do.
18	71.8	1	8 folds blanket	26		60	73	All inactive	None revived	None hatched.
		2	16 folds blanket					do	do	Do.
		3	24 folds blanket					do	do	Do.
		4	32 folds blanket					Part active	Part revived	Do.
		5	40 folds blanket					do	All revived	Part hatched.
		6	48 folds blanket					All active		Do.
19	[1] 71.8	1	8 folds blanket	26		15	28	All inactive	None revived	None hatched.
		2	16 folds blanket					Part active	Part revived	Do.
		3	24 folds blanket					All active		Part hatched.
		4	32 folds blanket					do		Do.
		5	40 folds blanket					do		Do.
		6	48 folds blanket					do		Do.
20	71.8	1	8 folds blanket	26	15	30	51	All inactive	None revived	None hatched.
		2	16 folds blanket					do	do	Do.
		3	24 folds blanket					Part active	Part revived	Do.
		4	32 folds blanket					do	All revived	Part hatched.
		5	40 folds blanket					All active		Do.
		6	48 folds blanket					do		Do.
21	143	1	Fully exposed	0		15	22	All inactive	None revived	None hatched.
		2	8 folds blanket					Part active	All revived	Do
		3	16 folds blanket					All active		Part hatched.
		4	24 folds blanket					do		Do.
		5	32 folds blanket					do		Do.
		6	40 folds blanket					do		Do.
		7	48 folds blanket					do		Do.
22	143	1	Fully exposed	0		60	72	All inactive	None revived	None hatched.
		2	8 folds blanket					do	do	Do.
		3	16 folds blanket					do	do	Do.
		4	24 folds blanket					Part active	Part revived	Do.
		5	32 folds blanket					do	do	Do.
		6	40 folds blanket					All active		Part hatched.
		7	48 folds blanket					do		Do.
23	143	1	Fully exposed	18		15	23	All inactive	None revived	None hatched.
		2	4 folds blanket					do	do	Do.
		3	32 folds blanket					do	Part revived	Do.
24	143	1	8 folds blanket	26		15	47	All inactive	None revived	None hatched.
		2	16 folds blanket					do	do	Do.
		3	24 folds blanket					do	do	Do.
		4	36 folds blanket					do	Part revived	Do.
25	143	1	8 folds blanket	26	15	15	49	All inactive	None revived	None hatched.
		2	16 folds blanket					do	do	Do.
		3	24 folds blanket					do	do	Do.
		4	32 folds blanket					do	Part revived	Do.
		5	40 folds blanket					Part active	do	Do.
		6	48 folds blanket					All active		Part hatched.
26	214.2	1	8 folds blanket	26		15	34	All inactive	None revived	None hatched.
		2	16 folds blanket					do	do	Do.
		3	24 folds blanket					do	do	Do.
		4	32 folds blanket					do	Part revived	Do.
		5	40 folds blanket					Part active	All revived	Part hatched.
		6	48 folds blanket					All active		Do.

[1] Interior of chamber at 72° C.

Table 2.—*Showing effect of hydrocyanic acid gas on lice and lice ova*—Continued

Experiment No.	Sodium cyanide; ounces per 1,000 cubic feet	Specimen No.	Degree of protection of specimen; how wrapped	Initial vacuum in inches	Followed by pressure in pounds	Time of exposure at 0 (or under pressure) (minutes)	Total time in chamber (minutes)	Condition of lice upon removal from chamber	Condition of lice later	Ova hatching at 30° C.
27	238	1	32 folds blanket	26	12	45	73	All inactive	None revived	None hatched.
		2	40 folds blanket					do	do	Do.
		3	48 folds blanket					do	do	Do
28	285.7	1	8 folds blanket	0		60	72	All inactive	None revived	None hatched.
		2	16 folds blanket					do	do	Do.
		3	24 folds blanket					Part active	Part revived	Part hatched.
		4	32 folds blanket					do	All revived	Do.
		5	40 folds blanket					All active		Do.
		6	48 folds blanket					do		Do.
29	285.7	1	Wrapped in clothing and placed in wicker suit case.	18		15	33	All inactive	None revived	None hatched.
		2	8 folds blanket in fiberoid suit case.					do	do	Do.
		3	In loose folds of clothing in mesh bag					do	do	Do.
30	285.7	1	8 folds blanket	26		15	33	All inactive	None revived	None hatched.
		2	16 folds blanket					do	do	Do
		3	24 folds blanket					do	do	Do
		4	32 folds blanket					do	Part revived	Do
		5	40 folds blanket					Part active	All revived	Do
		6	48 folds blanket					All active		Part hatched.
31	285.7	1	Wrapped in clothing in clothing bag in center of pile of 52 bags of clothing.	26	12	15	37	Part active	Part revived	Part hatched.
		2	Wrapped in clothing in clothing bag at edge of pile of 52 bags of clothing.					All inactive	None revived	None hatched.
32	285.7	1–10	Wrapped in clothes in mesh bags. Bags placed on wire racks allowing circulation of gas.	26		15	33	All inactive [1]	None revived [1]	None hatched.
33	285.7	1	24 folds blanket	26		30	49	All inactive	None revived	None hatched.
		2	32 folds blanket					do	do	Do
		3	40 folds blanket					do	do	Do.
		4	48 folds blanket					Part active	Part revived	Do
34	285.7	1	In clothing in wicker suit case.	26		30	48	All inactive	None revived	None hatched.
		2	In clothing in leather suit case.					do	Part revived	Do.
		3	In clothing in canvas suit case.					do	do	Do.
		4	In folds clothing in bag in center pile of six bags of clothing.					do	None revived	Do.
35	285.7	1	Wrapped in clothing in mesh bag in center of pile of 11 bags of clothing.	26		30	48	All inactive	None revived	None hatched.
		2	Wrapped in fur overcoat in valise in center of pile of 11 bags.					do	Part revived	Do.
36	285.7	1	8 folds blanket in leather valise.	26		60	80	All inactive	None revived	None hatched.
		2	8 folds blanket in fiberoid suit case.					do	do	Do.
		3	8 folds blanket in wood veneer case.					do	do	Do.

[1] Same results in all 10 specimens.

TABLE 2.—*Showing effect of hydrocyanic acid gas on lice and lice ova*—Continued

Experiment No.	Sodium cyanide; ounces per 1,000 cubic feet	Specimen No.	Degree of protection of specimen; how wrapped	Initial vacuum in inches	Followed by pressure in pounds	Time of exposure at 0 (or under pressure) (minutes)	Total time in chamber (minutes)	Condition of lice upon removal from chamber	Condition of lice later	Ova hatching at 30° C.
37	427.2	1	8 folds blanket	26	----	15	36	All inactive	None revived	None hatched.
		2	16 folds blanket					do	do	Do.
		3	24 folds blanket					do	do	Do.
		4	32 folds blanket					do	Part revived	Do.
		5	40 folds blanket					do	do	Do.
		6	48 folds blanket					do	do	Do.
38	547.6	1	16 folds blanket	26	----	15	38	All inactive	None revived	None hatched.
		2	24 folds blanket					do	do	Do.
		3	32 folds blanket					do	do	Do.
		4	40 folds blanket					do	do	Do.
		5	48 folds blanket					do	Part revived	Part hatched.
39	738	-----	Chamber full of pillows and blankets. Specimens placed from side to center.	26	----	30	49			
		1	At side wall					All inactive	None revived	None hatched.
		2	One-fifth way in					do	do	Do.
		3	Two-fifths way in					do	do	Do.
		4	Three-fifths way in					do	do	Do.
		5	In center					do	do	Do.
		6	In 8 folds blanket in center of chamber.					do	do	Do.
		7	In 16 folds blanket in center.					do	Part revived	Do.
		8	In 24 folds blanket in center.					do	do	Do.

RETENTION OF HYDROCYANIC ACID GAS BY FABRICS

In the use of the higher concentrations of hydrocyanic acid gas (above 143 ounces sodium cyanide per 1,000 cubic feet) for delousing, it was shown that it was essential to take time and care to air out the clothing bundles well before returning them to the immigrants. In certain cases definite symptoms of hydrocyanic acid gas poisoning were noticed. This is usually in cold weather when heavy clothing was worn and the immigrants sat about in warm rooms after dressing. On account of these experiences and the reports of certain deaths under similar circumstances, several experiments were made which show that hydrocyanic acid gas, especially when forced into fabrics by the vacuum method, will be retained a considerable time. A single experiment will suffice:

Six clean woolen blankets, combined weight 27 pounds, were folded and stacked, one above the other, in one of the clothing sterilizers, 84 cubic feet capacity. The doors were closed and 26 inches vacuum was obtained. Hydrocyanic acid gas in proportion of that from 285.7 ounces sodium cyanide per 1,000 cubic feet was generated and drawn into the chamber. The vacuum was broken, and after 30 minutes a second vacuum of 26 inches was obtained, broken, and the chamber washed through by the vacuum pump for 7 minutes. The doors at either end of the chamber were then opened wide and the chamber aired free from all traces of gas. The blankets were taken out-of-doors, unfolded, and each was shaken in the breeze several times. They were then returned to the floor of the chamber in a loose heap. An adult white rat in a wire cage was placed on the floor of the chamber two feet away from the blankets and both

doors were closed. After nine minutes the doors were reopened. There was a faint odor of hydrocyanic acid gas in the chamber and the rat was dead.

CYANOGEN CHLORIDE-HYDROCYANIC ACID GAS MIXTURE

Using the same apparatus and the same steps of procedure as used with hydrocyanic acid gas, 26 experiments were made with cyanogen chloride-hydrocyanic acid gas mixture. The gas was generated by mixing sodium cyanide, 4 parts, sodium chlorate, 3 parts, commercial hydrochloric acid, 20° Baumé, 17 parts, and warm tap water, 17 parts. These proportions had been prescribed for ship fumigation. Generation of this gas was slower than that of hydrocyanic acid, about 10 minutes being required. It had been demonstrated to be more toxic to white rats than straight hydrocyanic acid gas in the same concentration. A brief summary of some of these experiments is here given:

TABLE 3.—*Showing effect of cyanogen chloride-hydrocyanic acid gas on lice and lice ova*

Experiment No.	Sodium cyanide; ounces per 1,000 cubic feet	Specimen No.	Degree of protection of specimen; how wrapped	Initial vacuum in inches	Followed by pressure in pounds	Time of exposure at 0 (or under pressure) (minutes)	Total time in chamber (minutes)	Condition of lice upon removal from chamber	Condition of lice later	Ova hatching at 30° C
1	4	1	Fully exposed	26		120	144	All inactive	Part revived	Part hatched.
		2	do					do	do	None hatched.
2	5.95	1	Fully exposed	26		15	40	Part active	Part revived	Part hatched.
		2	do					All inactive	do	Do.
3	11.9	1	Fully exposed	26		15	39	All inactive	Part revived	Part hatched.
		2	do					do	do	None hatched.
		3	do					do	do	Part hatched.
		4	do					do	do	Do.
4	17.9	1	Fully exposed	26		15	39	All inactive	Part revived	None hatched.
		2	do					do	None revived	Do.
5	23.8	1	Fully exposed	26		15	44	All inactive	None revived	None hatched.
		2	do					do	do	Do.
6	60	1	8 folds blanket	26		30	57	All inactive	None revived	None hatched.
		2	16 folds blanket					do	do	Do.
		3	24 folds blanket					do	do	Do.
		4	32 folds blanket					Part active	Part revived	Do.
		5	40 folds blanket					do	do	Part hatched.
		6	48 folds blanket					All active		Do.
7	118	1	8 folds blanket in oilcloth suit case in center of pile of baggage and clothing bags.	26		30	56	Part active	All revived	Part hatched.
8	118	1	8 folds blanket	26		30	57	All inactive	None revived	None hatched.
		2	16 folds blanket					do	do	Do.
		3	24 folds blanket					do	do	Do.
		4	32 folds blanket					do	do	Do.
		5	40 folds blanket					Part active	Part revived	None hatched.
		6	48 folds blanket					do	do	Part hatched.
9	238	1	8 folds blanket	26		15	43	All inactive	None revived	None hatched.
		2	16 folds blanket					do	do	Do.
		3	24 folds blanket					do	do	Do.
		4	32 folds blanket					Part active	Part revived	Part hatched.
		5	40 folds blanket					do	All revived	Do.
		6	48 folds blanket					All active		Do.
10	238	1	24 folds blanket	26		30	59	All inactive	None revived	None hatched.
		2	32 folds blanket					do	do	Do.
		3	40 folds blanket					do	do	Do.
		4	48 folds blanket					do	do	Do.

The cyanogen chloride-hydrocyanic acid gas has practically replaced all other ship fumigants at the New York quarantine station, largely because it has an odor and is lachrymatory and irritating to the nose and throat, which gives warning and makes for safety. It was hoped that this gas mixture would also give a warning if too much remained in clothing or baggage after disinfestation. If so, this would obviate having to take the extra care and time in/airing out the bundles and would allow a much desired reduction of 10 to 15 minutes in the time of their return to the immigrants. We were disappointed to find, however, that, in addition to taking longer to generate the gas, the cyanogen chloride part of the mixture seemed to ventilate out of fabrics more readily than the hydrocyanic acid part. Under certain conditions the warning factor of the cyanogen chloride would be aired out, but enough of the hydrocyanic acid gas left in to be dangerous. This was demonstrated by a number of experiments, of which two are quoted here:

(1) In performing experiment No. 8, Table 3, two clean woolen blankets were folded tightly into a black oilcloth suit case and gassed with the specimens (118 ounces sodium cyanide per 1,000 cubic feet, initial vacuum of 26 inches, exposure 30 minutes). The suit case was not opened until five hours later. There remained no odor of cyanogen chloride in the blankets and no lachrymatory effect. There was, however, a distinct typical odor of hydrocyanic acid gas.

(2) An experiment, similar to the one showing the retention of hydrocyanic acid gas by fabrics (above), was performed, using six blankets and cyanogen chloride-hydrocyanic acid gas in concentration of that from 143 ounces sodium cyanide per 1,000 cubic feet, initial vacuum of 26 inches, and 120 minutes' exposure. The chamber and the blankets were aired for several minutes until there remained no odor of cyanogen chloride and no lachrymatory effect. The blankets were returned to the chamber in a loose heap, a white rat in a wire cage was introduced, and the chamber closed for nine minutes. Upon opening up, the odor of hydrocyanic acid gas was present in the chamber, but there was no odor of cyanogen chloride and no lachrymatory effect. The rat was dead.

This apparent tendency of the cyanogen chloride gas to leave fabrics more readily than the hydrocyanic acid gas might be remembered in doing cyanogen chloride-hydrocyanic acid gas ship fumigations. The medical officer comes to depend largely upon the absence of the odor and the lachrymatory effect of cyanogen chloride in determining whether a compartment has been safely ventilated after fumigation. It is entirely possible that a ship after inspection may be declared safe and free from gas because these warning signs are absent and yet enough hydrocyanic acid gas remain if mattresses, pillows, and blankets in large quantities are present, to produce unpleasant or even fatal results.

OTHER GASES

During the course of the experiments with the cyanide gases the effects on lice of a few other available gases were tried. Sulphur

dioxide and chlorine could not be used because of their bleaching effects on fabrics. The gases used were ether, chloroform, formaldehyde, carbon bisulphide, and carbon tetrachloride. All these, except formaldehyde and carbon tetrachloride, presented some factor such as inflammability, cost, etc., which would preclude their use as general delousing agents. Only a few tests were made, but they indicated that to obtain good results such high concentrations would be necessary that the cost would be prohibitive and the time of the fumigation process too long.

(1) *Ether*.—The chamber was warmed up to about 39° C. Specimens of lice and fresh-laid ova were fully exposed in the chamber. A vacuum of 26 inches was obtained. A bottle containing ether in proportion of 143 fluid ounces per 1,000 cubic feet, warmed in a water bath, was connected and the ether vapor drawn into the chamber by the vacuum. The vacuum was broken to 0 by drawing warm air from an adjacent heated chamber. After 15 minutes' exposure all the lice were found active and about 50 per cent of the ova subsequently hatched at 30° C. incubation.

(2) *Chloroform*.—Exactly the same procedure was followed, using 143 fluid ounces chloroform per 1,000 cubic feet, as is described with ether above, and with the same results on lice and lice ova.

(3) *Carbon bisulphide*.—Using the same procedure, except that the chamber was warmed to 30° C., 36 fluid ounces of carbon bisulphide per 1,000 cubic feet were used, with the same results on lice and lice ova.

(4) *Carbon tetrachloride*.—Using the same procedure as with ether, 107 fluid ounces of carbon tetrachloride per 1,000 cubic feet caused some of the lice to become inactive, but all revived and some of the ova subsequently hatched.

(5) *Carbon bisulphide and carbon tetrachloride*.—A mixture of carbon bisulphide and carbon tetrachloride, 36 fluid ounces and 107 fluid ounces, respectively, per 1,000 cubic feet, were used, and about 50 per cent of the lice were inactive after 20 minutes' exposure, but all revived later. About 50 per cent of the ova subsequently hatched.

(6) *Formaldehyde*.—(*a*) With lice and fresh ova fully exposed and the air in the chamber warm and moist, potassium permanganate and formalin (40 per cent) were mixed in a container in the chamber, in proportion of 6.8 ounces potassium permanganate and 16.9 fluid ounces formalin per 1,000 cubic feet, and chamber was closed for 60 minutes. Lice all remained active and about 50 per cent of the ova subsequently hatched.

(*b*) With 13.6 ounces potassium permanganate and 33.8 fluid ounces per 1,000 cubic feet formalin, mixed in a retort outside of chamber by slowly and carefully adding the formalin to the permanganate, and the formaldehyde gas was drawn into the warm, moist

chamber by a vacuum of 26 inches therein, vacuum broken to 0, and 60 minutes' exposure, the lice remained active and some of the ova subsequently hatched.

HEAT

The facilities at hand during the experiments with lice afforded an opportunity to test the efficiency of the generally accepted methods of delousing clothing by dry heat and steam, to determine the effect of different degrees of heat with varying combinations and degrees of moisture, vacuum pressure (air and steam), time of exposure, circulation of air in the chamber, and protection of the specimens by different amounts of wrapping in blankets, and to determine the effect of such procedures upon such articles as might be exposed to them in the disinfection of immigrants' clothing. After numerous experiments the conclusion was reached that the only reliable way of using heat in the routine delousing of clothing bundles is the established, but slow, method of sorting out and treating articles not damaged by steam by introducing the steam into the chamber under vacuum, running the steam pressure up to at least 15 pounds for 15 minutes, releasing the pressure, and drawing a secondary vacuum to aid in drying out the bundles.

OBSERVATIONS

While making the experiments upon which this article is based, certain observations were made not related to the main purpose of the investigation, but worthy of record:

1. About four months after beginning to raise lice by allowing them to feed upon the skin, some of the fine brown feces were accidently blown up into the experimenter's face while cleaning out the box. Almost immediately his eyes became red and watery and a profuse, thin discharge from the nose and a series of about 20 or 30 violent sneezes followed. This soon passed off without further symptoms. Water, acetone, alcohol, ether, and chloroform extracts were made from both louse bodies and louse feces, and when vaccinated with these the subject showed a very rapid and pronounced skin reaction. The water and alcohol extracts gave the stronger reactions. Several other persons vaccinated with the same extracts showed no reactions. Unfortunately, the subject had not been tested with louse extracts previous to starting to raise the lice. These extracts were kept in the ice box and were potent with the subject and impotent with control persons up to six months later. Just before discontinuing to feed the lice, a fresh set of extracts was made. These gave skin reactions on the subject for a few months after he had discontinued feeding the lice, but the reaction had entirely disappeared by the end of the fifth month.

2. At no time during the 14 months while constantly feeding 800 to 1,000 lice did any toxic symptoms appear, such as general malaise, depression, fever, and rash at areas other than where lice were fed, as described by Moore.[1]

3. Mature lice were usually killed by HCN and CNCl–HCN more readily than were the larva or the first stage nymphs.

4. Lice often changed color to red or reddish brown when killed by HCN or CNCl–HCN.

5. It has been assumed that cloth having a deep nap, such as plush, would give a certain degree of protection to lice from toxic gases. Careful observation, however, failed to show that they ever burrowed into fabrics as if seeking such protection.

6. Contrary to usual belief, lice ova were found to be as easily destroyed by cyanide gases as were lice. This is explained by the fact that the operculum of the ovum has numerous perforations through which gas may penetrate, whereas the louse is able to close its breathing stigmata tightly and to live for a considerable time on its internal air reserve.

7. Attempts were made at various times to neutralize the toxicity of hydrocyanic acid gas, using ammonia and formaldehyde, but without result of practical value.

8. The experiments with formaldehyde gas, as may be expected from observations with regard to other insects, indicate that destruction of lice or their eggs could not be expected from the concentration usually recommended for room fumigation.

CONCLUSIONS

1. The use of vacuum to force cyanide gas into packages to destroy insect life was introduced by the United States Department of Agriculture to kill bollworms in cotton bales, and, as adopted by Surgeon Grubbs for destroying lice in clothing and baggage, is an improvement over the steam method, since the packages are undisturbed and the contents uninjured. It has, however, distinct limitations.

2. Cyanide gas penetrates fabrics so slowly that it is applicable to delousing only when aided by an initial vacuum; the higher the vacuum the quicker and deeper the penetration.

3. The efficiency and practicability of the vacuum cyanide method in routine delousing of clothing and baggage of immigrants depend upon a proper balance of the three important factors, concentration of the gas, degree of initial vacuum, and length of exposure.

4. Lice and lice ova are easily killed by the cyanide gases. The minimum lethal concentrations of HCN gas and of CNCl–HCN gas mixture for fully exposed lice and lice ova, 15 minutes' exposure, was

[1] Jour. Amer. Med. Assn. Nov. 2, 1918, vol. 71, pp. 1481–1482.

determined to be that from about 18 ounces of sodium cyanide per 1,000 cubic feet.

5. Vacuums of 26 inches of mercury and air pressures of 15 pounds and combinations of these, used without gas over longer periods of time than those used in actual delousing, have no effect on lice and lice ova.

6. An air pressure of 15 pounds produced and held after the introduction of gas into the chamber does not appreciably aid in the penetration of the gas.

7. Dry heat of 72° C., with vacuum of 26 inches and 15 minutes' exposure, did not appreciably aid the vacuum in the penetration of the gas.

8. A secondary vacuum is of aid in clearing gas out of clothing bundles.

9. High concentrations of HCN require that materials be well ventilated after fumigation.

10. The odor and the lachrymatory effect of CNCl-HCN gas mixture may ventilate out, leaving a dangerous amount of HCN in fabrics. Hence there is no advantage in using CNCl-HCN rather than HCN.

11. Ship fumigation with cyanide gases (5 ounces sodium cyanide per 1,000 cubic feet for two hours without vacuum) can not be expected to kill all lice or lice ova.

12. The vacuum hydrocyanic acid gas method prescribed for the fumigation of imported compressed cotton bales (see Experiment No. 9, Table 2) was tried repeatedly but failed to destroy lice or lice ova protected by 16 to 24 folds of wool blanket.

13. The experiments made in this study, together with records of actual operations, definitely indicate the proper combination of HCN concentration, initial vacuum, and time of exposure necessary to destroy lice or lice ova in immigrants' clothing and ordinary baggage. The process is an improvement over the steam method, especially for baggage, and the factors prescribed are within practical limits.

RECOMMENDATIONS

As a result of this study the following recommendations were made and were adopted as the procedure to be used at the New York quarantine station:

(a) That the use of hydrocyanic acid gas be continued as a routine delousing agent for the clothing of immigrants, using from 143 to 285.7 ounces sodium cyanide per 1,000 cubic feet (12 ounces to 24 ounces per 84 cubic foot chamber), or from 72 to 143 fluid ounces of liquid HCN, that the initial vacuum be 26 inches, and that the exposure be for at least 30 minutes.

(*b*) That in loading the sterilizing chambers the clothing bags and the baggage be placed on wire racks, thus separating them somewhat, rather than packing them in tightly without the racks.

(*c*) That after fumigation, the clothing bags be hung up, out of doors if possible, but at least in a stream of fresh air, until odor of gas disappears, before being returned to the immigrants.

(*d*) That the same concentration of gas and initial vacuum as recommended for clothing bags be used for baggage, but that the time of exposure be 1 hour. That the covers of trunks and other very large cases be opened for fumigation. As it is usually at least 8 to 24 hours after fumigation before the immigrant has the opportunity of unpacking his larger pieces of baggage, airing of same is not necessary.

(*e*) That the clothing of immigrants with typhus, or exposed to typhus, be sterilized by the vacuum pressure steam process; shoes, hats, suit cases, etc., which steam would injure, to be subjected to the standard vacuum cyanide process.

ACKNOWLEDGMENT

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A STUDY OF THE EFFECTS OF ANIONS UPON THE PROPERTIES OF "ALUM FLOC"

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In considering the formation of that complex substance commonly called "alum floc," it is convenient to distinguish two aspects. The first is the ionic equilibria involved when solutions of aluminium salts are mixed with alkaline waters. The second is the physical properties of the insoluble product formed, especially with reference to its existence in the colloidal, dispersed state and in the flocculated state. However, these two aspects are interconnected, since the physical properties of the solid phase are determined by its composition, and this in turn is a function of the ionic composition of the mixed solutions. Previous work (Miller, 1924) showed that the nature and concentration of the negative ions exert a great effect upon the composition and physical properties of the floc. These studies have now been extended. Anions not common to natural waters have been used to develop principles and the unique properties of the floc from *alum* are emphasized.

As a preliminary step in this study there were made electrometric titration curves of aluminium salts by sodium hydroxide in the

presence of several anions. The work of Theriault and Clark (1923) on the titration of alum and aluminium chloride was repeated and corroborated. Then since the pure aluminium salts could not be readily prepared for all of the negative ions which it was desired to study, the procedure was governed as follows: Preliminary experiments with aluminium chloride in presence of sodium sulphate as well as results in other lines (Miller, 1924) indicated that the effect of the monovalent chloride anion was practically completely masked by the presence of polyvalent anions. Therefore, experiments with polyvalent anions were conducted by introducing the aluminium ion into the solution as aluminium chloride and the polyvalent anion as the

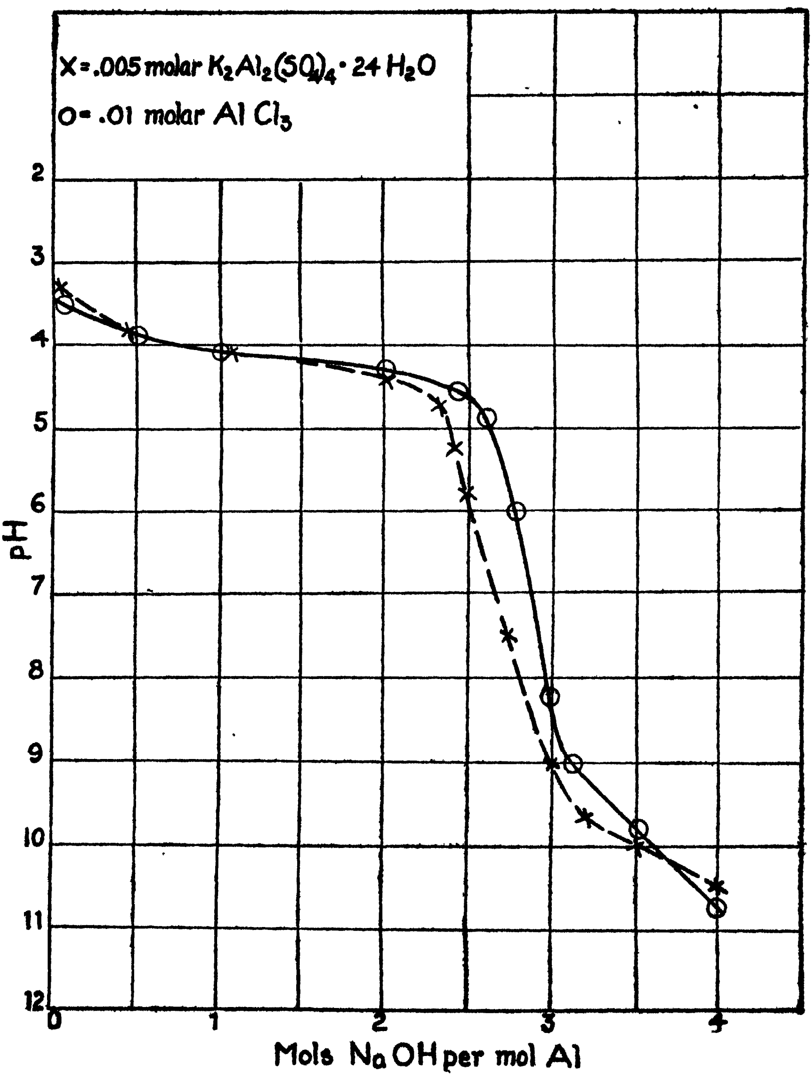


FIG. 1

potassium or sodium salt which yielded the anion in question. Four of these titration curves are shown in Figures 1 and 2. While they differ considerably in detail they all agree in showing a decided drop in potential before the "three equivalents of alkali" axis is reached, indicating that the floc is carrying down acid constituents from solution. This fact was also determined qualitatively upon the precipitates formed in presence of the various anions and a quantitative study made in presence of some of them (Miller, 1923 and 1924).

In the experimental work described in this paper, only very pure materials were used. C. P. chemicals were purified further by the usual methods. Solutions were made up in distilled water and standardized. Since the purpose of the research is to discover the fundamental principles underlying commercial water purification by

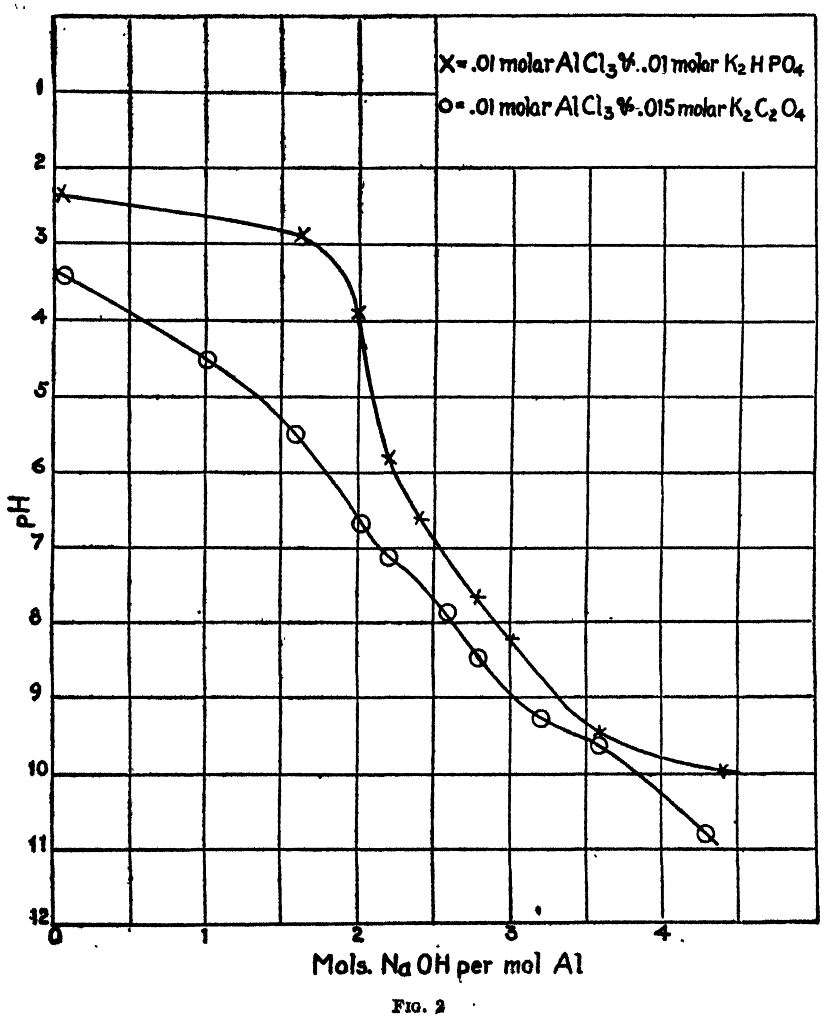


FIG. 2

alum, the solutions were as dilute as could be conveniently handled in the laboratory.

In the early part of the work upon alum at the Hygienic Laboratory the qualitative observation was made that when alum is treated with sodium hydroxide the region of hydrion concentration over which flocculation takes place is quite different from that in which flocculation occurs if aluminium chloride and sodium hydroxide are used. This suggests that the anions may determine the pH range over which flocculation or coagulation of the floc takes place. Several studies appear in the literature which, while not made with this specific purpose in view, throw light upon this subject. (In this connection

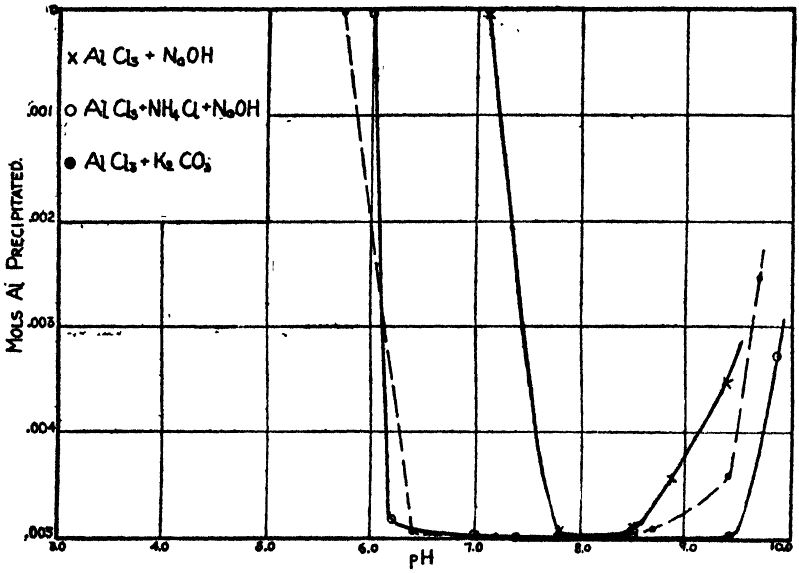


FIG. 3

see Blum, 1916; Buswell and Edwards, 1922; Wolman and Hannan, 1921; Daniels, 1923; Baylis, 1923; Theriault and Clark, 1923; Hatfield, 1924; Miller, 1923; Greenfield and Buswell, 1922; and Smith, 1920.) These papers include studies, from both practical and theoretical points of view, upon natural waters in filter plants and upon pure solutions in the laboratory. In general, these studies agree in showing a zone of fairly complete coagulation of alum (with corresponding low content of soluble aluminium in the filter effluent) covering a rather broad region of hydrion concentration. However, there is considerable divergence in the results of the various investigators as to the exact region of hydrion concentration over which coagulation occurs. This fact supports the idea that the mineral content of the water, or, more specifically, the anion content of the water, may influence the location of the zone of coagulation.

In order to test this hypothesis a series of experiments was conducted using the following procedure: Five hundred c. c. portions of aluminium salt solution, in the presence of various negative ions, were precipitated by the slow addition of 500 c. c. of a sodium hydroxide solution with mechanical stirring. The final concentration of Al was 0.005 molar. After the addition of the reagent had been completed, the solution was permitted to stand a half hour. The hydrion concentration was then determined colorimetrically. The solution was filtered through quantitative filter paper, the precipitate washed thoroughly with ammonium nitrate and ignited to constant weight. The amount of aluminium precipitated was

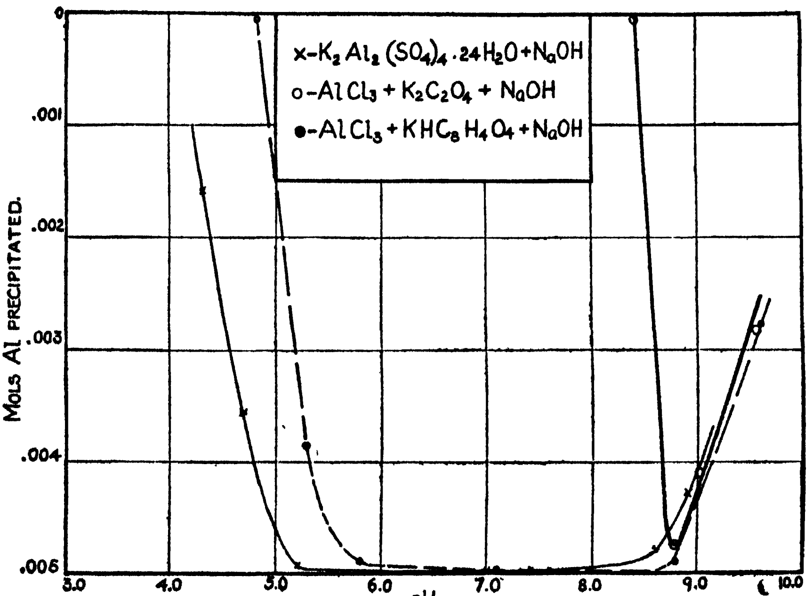


Fig. 4

then calculated from the weight of the alumina and the residual aluminium remaining in solution by difference. The numerical results are given in Tables 1 to 8, and these results plotted as "quantity of aluminium precipitated" against "hydrion concentration" are shown in Figures 3 to 5.

The effect of chloride and sulphate ion was studied by the addition of alkali to aluminium chloride and potassium alum. As in the titration experiments, the effect of other negative ions was studied by introducing the aluminium as aluminium chloride and the polyvalent anions as the potassium or sodium salt which yielded the anion in question.

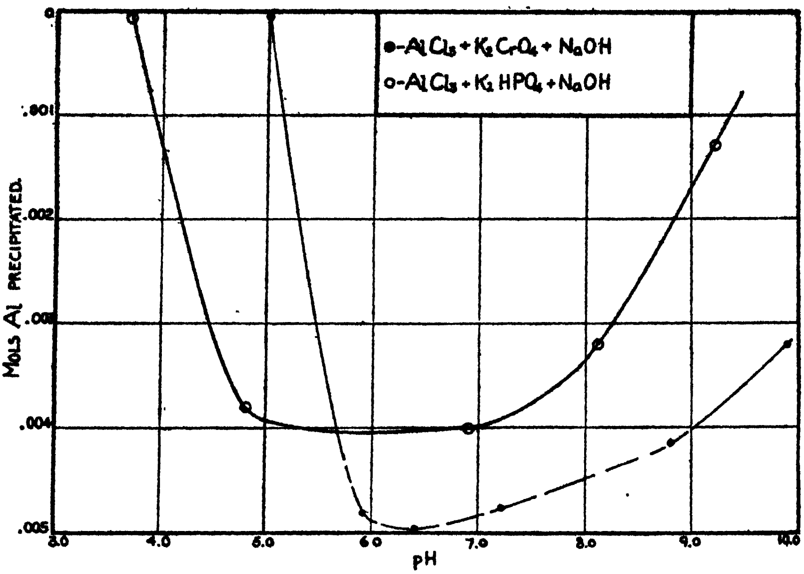


FIG. 5

TABLE 1

(0.005 molar aluminium chloride and sodium hydroxide)

Exp. No.	pH	Equivalents NaOH added per mol Al	Mols Al precipitated, determined as Al_2O_3	Remarks
1	5.0	2.50	0	Solution slightly opalescent
2	7.1	2.90	0	Solution distinctly opalescent.
3	7.8	2.95	.00494	Good floc; filtrate clear.
4	8.5	3.00	.00495	Do.
5	8.8	3.10	.00442	Do.
6	9.4	3.40	.00304	Do.

TABLE 2

(0.005 molar aluminium chloride, 0.5 molar ammonium chloride and sodium hydroxide)

Exp. No.	pH	Equivalents NaOH added per mol Al	Mols Al precipitated, determined as Al_2O_3	Remarks
47	5.5	2.50	0	Clear solution; no floc.
57	6.0	2.65	0	Solution opalescent; no floc.
55	6.2	2.70	.00483	Good floc; clear filtrate.
53	6.8	2.85	....	Do.
48	7.0	2.95	.00496	Do.
49	7.4	3.40	.00508	Do.
50	7.8	4.00	.00508	Do.
51	8.5	6.00	.00508	Do.
52	8.5	8.00	....	Do.
54	9.4	180.00	.00506	Do.
56	9.8	....	.00277	Do.

The results in Table 2 when compared to those in Table 1 show the "salting out" effect of the strong ammonium chloride solution upon the colloidal floc present. The results in Table 2 agree with those of Blum (1916) for the analytical determination of aluminium.

TABLE 3

(0.005 molar aluminium chloride and potassium carbonate)

Exp. No.	pH	Equivalents K_2CO_3 added per mol Al	Mols Al precipitated, determined as Al_2O_3	Remarks
36	4.6	2.00	0	Opalescent solution; no floc.
37	5.0	2.40	0	Do.
38	5.3	2.80	0	Do.
39	5.7	3.00	0	Do
43	6.1	3.20	.00265	Fair floc; filtrate opalescent.
40	6.4	3.50	.00496	Good floc, filtrate clear.
41	7.2	4.00	.00496	Do
42	8.7	5.00	.00491	Do.
44	9.4	6.00	.00440	Do.
45	9.4	7 00	----------	Do.
46	9.7	10.00	.00252	Do.

TABLE 4

(0.0025 molar potassium alum, $K_2Al_2(SO_4)_4 \cdot 24H_2O$, and sodium hydroxide)

pH	Equivalents NaOH added per mol Al	Mols Al precipitated	Remarks
4.3	1.200	0.001590	Good floc; filtrate clear.
4.7	1.800	.003551	Do.
5.2	2.400	.004882	Do.
5.8	2.500	.004937	Do.
6.2	2.600	.004960	Do.
6.7	2.700	.004993	Do.
7.0	2.723	.004990	Do.
7.4	2.800	.004984	Do.
7.6	2.850	.004980	Do
8.6	2.950	.004785	Do.
8.9	3.100	.004279	Do.

The results in Table 4 are taken from Table 4 of the article by Miller, 1923. In this work residual aluminium was determined by filtering off the floc from a two liter sample, evaporating the filtrate to small volume, and determining aluminium as alumina by Blum's (1916) method.

TABLE 5

(0.005 molar aluminium chloride, 0.0075 molar potassium oxalate and sodium hydroxide)

Exp. No.	pH	Equivalents NaOH added per mol Al	Mols Al precipitated, determined as Al_2O_3	Remarks
9	7.0	1.80	0	Faintly opalescent; no floc.
7	8.0	2.20	0	Do.
10	8.4	2.60	0	Opalescent; no floc.
11	8.8	2.90	.00477	Floc; filtrate clear.
8	9.0	3.00	.00410	Do.
12	9.6	3.40	.00284	Do.

TABLE 6

(0.005 aluminium chloride, 0.0075 molar potassium acid phthalate, and sodium hydroxide)

Exp. No.	pH	Equivalents NaOH added per mol Al	Mols Al precipitated, determined as Al_2O_3	Remarks
29	3.8	1.00	0	Clear solution; no floc.
30	4.8	2.00	0	Opalescent; no floc.
31	5.3	3.00	0.00385	Fair floc; filtrate opalescent.
34	5.8	3.50	.00489	Good floc; filtrate clear.
32	7.1	4.00	.00510	Do.
35	8.8	4.50	.00489	Do.
33	9.6	5.00	.00277	Do.

TABLE 7

(0.005 molar aluminium chloride, 0.0075 molar potassium chromate, and sodium hydroxide)

Exp. No.	pH	Equivalents NaOH added per mol Al	Mols Al precipitated, determined as Al_2O_3*	Remarks
13	4.8	0	0	Opalescent; no floc
14	4.8	0.40	0	Do.
15	5.0	1.00	0	Incipient flocculation; will not filter.
18	5.9	1.50	.00561	Floc; filtrate opalescent.
16	6.4	2.00	.00614	Do
19	7.2	2.50	.00546	Do.
17	8.8	3.00	.00512	Floc; filtrate clear.
29	9.8	3.40	.00322	Do.

* Precipitate contains chromate which will not wash out

TABLE 8

(0.005 molar aluminium chloride, 0.005 molar secondary potassium acid phosphate, and sodium hydroxide)

Exp. No.	pH	Equivalents NaOH added per mol Al	Mols Al precipitated, determined as $AlPO_4$*	Remarks
21	2.6	0	0	Solution clear.
22	3.0	1.00	0	Solution opalescent; no floc.
25	3.3	1.50	0	Very opalescent; no floc.
26	3.4	1.75	0	Increasing opalescence; no floc.
27	3.7	1.90	0	Do.
23	4.8	2.00	.00388	Floc; filtrate opalescent.
28½	6.9	2.50	.00403	Floc; filtrate slightly opalescent.
24	8.1	3.00	.00321	Floc; filtrate clear.
28	9.2	3.50	.00130	Do.

* It was assumed that the precipitate had the composition, $AlPO_4$.

The data in Tables 7 and 8 are much less reliable than the remainder of the data. In Table 7 the values are considerably too high, due to the fact that chromate is carried down which can not be readily removed from the precipitate. In Table 8 it is assumed that the precipitate has the composition $AlPO_4$. That aluminium precipitates as the neutral phosphate in solutions weakly acid with acetic acid is

well known. Whether this composition extends to high pH values is questionable in light of recent work on the composition of the aluminium precipitate from alum (Miller, 1923). The results do indicate definitely, however, the range of hydrion concentration over which flocculation occurs in presence of chromate and phosphate ion.

The results thus far have been obtained by experimenting with solutions 0.005 molar with respect to aluminium. It was desired to extend these investigations to solutions approaching in strength those used in the actual operation of water purification. Solutions 0.0005 molar with respect to aluminium of aluminium chloride and of potassium alum were made up, treated by sodium hydroxide, and analyzed as before. The results are given in Tables 9 and 10 and plotted in Figure 6. The regions of flocculation are seen to be approximately the same as for the more concentrated solutions.

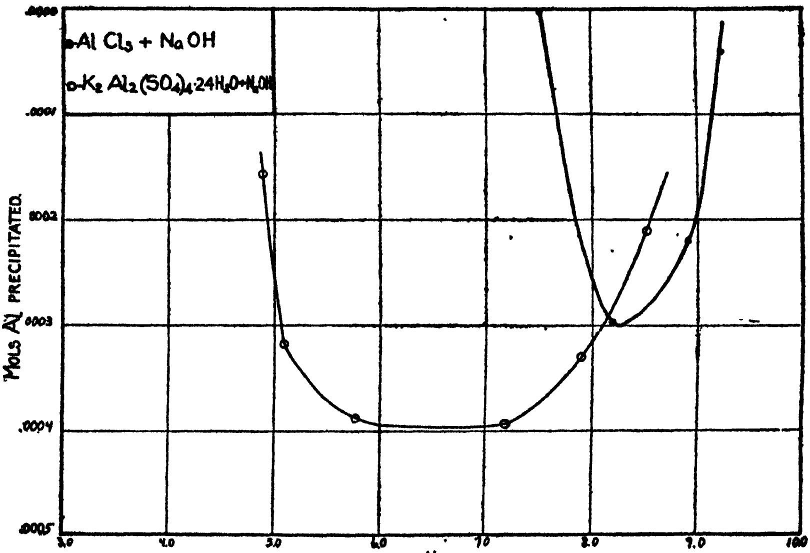


FIG. 6

TABLE 9

[0.0005 molar aluminium chloride and sodium hydroxide]

Exp. No.	pH	Equivalents NaOH added per mol Al	Mols Al ppt. determined as Al_2O_3	Remarks
60	5.8	2.90	0	No floc.
61	6.3	3.00	0	Do.
66	6.9	3.20	0	Do.
67	7.5	3.30	0	Do.
62	8.1	3.40	----------	Flocculation.
64	8.2	3.80	.00030	Do.
63	8.9	4.00	.00022	Do.
65	9.2	4.30	.00060	Do.

TABLE 10

(0.00025 molar potassium alum, $K_2Al_2(SO_4)_4.24H_2O$, and sodium hydroxide)

Exp. No.	pH	Equivalents NaOH added per mol Al	Mols Al precipitated, determined as Al_2O_3	Remarks
76	4.9	0.8	.00016	Flocculation.
75	5.0	1.2	----------	Do.
73	5.1	1.6	.00032	Do.
72	5.8	2.0	.00039	Do.
71	7.2	2.4	.00039	Do.
70	7.9	2.7	.00033	Do.
74	8.5	3.0	.00021	Do.

The results tabulated here show the regions of hydrion concentration over which flocculation occurs in the presence of various negative ions for that complex substance commonly called alum floc and often incorrectly termed aluminium hydroxide. In the strictest sense these data do not represent the range of hydrion concentration over which the alum floc is "insoluble." Witness, for example, the case of the oxalate. In this example, in passing from lower to higher pH values the solutions become more and more opalescent, indicating that there is an insoluble substance present in the highly dispersed colloidal state. It is not until the pH rises to the value of 8.8 that flocculation occurs. Similarly the presence of ammonium chloride in relatively high concentration assists the coagulation of the colloidal floc produced by mixing aluminium chloride and sodium hydroxide and very perceptibly broadens the coagulation zone.

It must be emphasized that alum floc, while it sometimes exists in the state of a colloidal suspension, is quite different in a relative sense from what is often described in the literature as colloidal aluminium hydroxide. If, for example, an aluminium chloride-ammonia mixture is placed in a collodion bag and dialyzed, the resulting colloidal material becomes more and more sensitive to the presence of coagulating anions as dialysis proceeds. If dialyzed sufficiently long, coagulation will take place spontaneously. If the process is stopped just before this stage is reached a product is secured which is exceedingly sensitive, requiring the merest trace of coagulating anion to render it unstable. The material termed alum floc which sometimes exists in the colloidal state is, as has been shown, sensitive especially to polyvalent anions and hydrion concentration. As compared to the dialyzed sol, however, it requires enormous quantities of coagulating anion to affect it.

These data make evident the importance of the negative ion in the flocculation of the solid phase. The hydrion zone of coagulation may be controlled at will by varying the negative ions present in solution. Coagulation must therefore be partially dependent upon

the coagulating effect of the anions and partially upon the hydrion concentration. While it appears that polyvalent anions are, in general, more efficient than monovalent anions in producing coagulation, the effect of each anion seems to be specific in determining the particular region of hydrion concentration over which flocculation will occur. The sulphate anion is unique among the anions studied in that it produces (under the conditions described) a comparatively good floc over a broad range of hydrion concentration. The existence of a colloidal, opalescent suspension has never been observed with pure alum solutions. It occurred with all other anions studied.

As a further example of the strong coagulating effect of the sulphate ion as compared to the chloride ion we cite the following: If very dilute solutions of aluminium chloride (0.0005 molar) and sodium hydroxide be mixed in such proportions that somewhat less than three mols of sodium hydroxide per mol of aluminium chloride are present no floc will form and the solutions will remain perfectly clear and transparent. If, then, an equivalent quantity of neutral sodium sulphate is added, flocculation takes place. If more concentrated solutions of aluminium chloride (0.01 molar) are used, the solutions become opalescent upon addition of sodium hydroxide. As more and more sodium hydroxide is added, the opalescence increases until three mols of sodium hydroxide per mol aluminium chloride are added, at which point flocculation takes place. Upon permitting these opalescent solutions to stand, a process of solution, dispersion, or both occurs, so that at the end of several days the solutions are clear and transparent, or nearly so. If to the opalescent solution which first forms or to the clear solution which finally results sodium sulphate be added, flocculation takes place. The photographs in Plate I illustrate the facts just stated. Since it was desired that the opalescence should be plainly discernible in the photographs, relatively strong (0.01 molar) solutions of aluminium chloride were used. To these were added increasing amounts of sodium hydroxide. The pH was determined colorimetrically. For Plate I (A) from left to right we have the following data:

	Tube No.—				
	1	2	3	4	5
Mols NaOH per mol $AlCl_3$	1.0	2.3	2.5	2.7	3.0
pH	4.2	4.4	5.2	6.1	8.7

As increasing amounts of sodium hydroxide are added, opalescence increases until three equivalents of the reagent per mol aluminium chloride have been added. At this point flocculation occurs. Plate

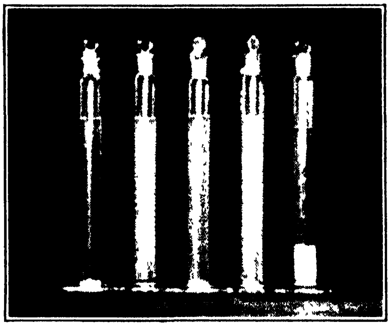
I(B) shows the effect of the addition of three equivalents of sodium sulphate per mol aluminium chloride to the above mixtures. Good flocculation occurs in every case. A slight increase in pH value is noted when sodium sulphate is added. Below are the data for Plate I(B):

	Tube No.—				
	1	2	3	4	5
Mols NaOH per mol $AlCl_3$	1.0	2.3	2.5	2.7	3.0
pH	4.2	4.6	5.3	6.9	9.0
Mols Na_2SO_4 per mol $AlCl_3$	1.5	1.5	1.5	1.5	1.5

As noted above, a relatively high concentration of aluminium chloride was used in order to make the results plainly evident in the photographs. The principle thus illustrated applies to more dilute solutions.

When flocculation of the aluminium chloride-sodium hydroxide mixtures is produced by the addition of sodium sulphate as described above, an analysis of the floc by the method of Miller (1923) shows that the floc contains approximately the same proportion of sulphate as would be contained by a floc at the same hydrion concentration produced from alum and sodium hydroxide. This co-precipitation of an acid component has already been dealt with by an analytical method (Miller 1923 and 1924).

Theriault and Clark (1923) have made a study of the region of hydrion concentration over which *rapid* flocculation of alum at high dilutions occurs when the alum is added to alkaline solutions or to buffered solutions. Their results show that, as the alum solutions become increasingly dilute, the pH zone of rapid flocculation rapidly narrows, giving a maximum rate of flocculation at a pH of 5.5. Hatfield (1924), in data obtained with alum upon Lake St. Clair water by the method of Theriault and Clark, found a maximum rate of flocculation at a pH of 6.1 to 6.3. In contrast to this, he observed a much broader zone of hydrion concentration (pH 5.8 to pH 7.5) in which the filter effluent was practically free from soluble aluminium. These results are in accord with the broad zone of coagulation for alum described in this paper. Now it is obvious that the zone of *rapid* coagulation must lie within the zone of coagulation for any particular anion; but it does not necessarily follow that the two zones will coincide. The results just cited plainly indicate that for alum they do not. It is of considerable interest and perhaps significance that for alum the zone of most rapid flocculation lies in the most acid portion of the zone of coagulation. This is the portion of the zone of coagulation in which the solid phase is highest in sulphate content.



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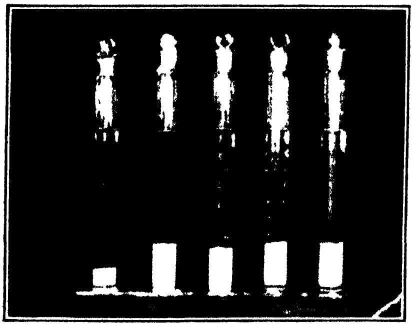

B

Theriault and Clark (1923) have suggested, with reservations, that the pH value of 5.5 at which maximum rate of flocculation of alum occurs is of significance in the determination of the isoelectric point for aluminium hydroxide. Hatfield (1924) refers to his values of pH 6.1 to pH 6.3 as indicating the "apparent isoelectric point" of aluminium hydroxide. As the results upon the effect of anions in determining the hydrion zone of coagulation suggest, and as will be shown in a moment, the hydrion zone of *rapid* flocculation may be varied at will by a variation in the anions present in solution. The results of the investigators just quoted, while of value and importance

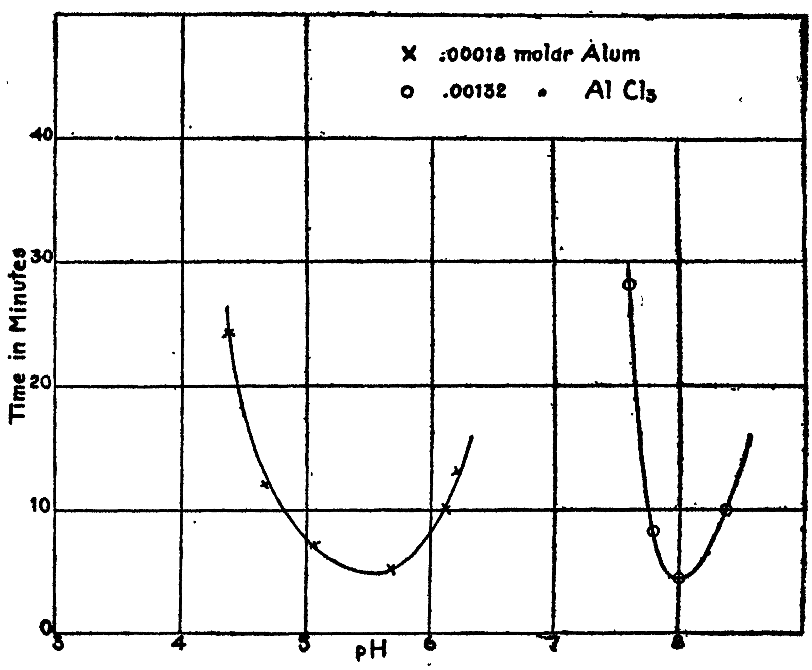

FIG. 7

to the water works profession as a determination of the zone of hydrion concentration in which flocculation occurs most rapidly for the conditions described, is not of significance as a direct experimental method for the determination of the true isoelectric point of aluminium hydroxide.

Theriault and Clark (1923) in their determination of the zone of hydrion concentration at which the maximum rate of flocculation occurs, used solutions containing 100 parts per million of alum with success. When solutions of aluminium chloride and sodium hydroxide of the same molar concentrations as the above are used, no flocculation occurs within 24 hours. It is necessary to increase the aluminium chloride concentration to 0.00132 molar in order to secure flocculation within a reasonable time. In Figure 7 is plotted the time of first

appearance of floc against pH for solutions of 0.00018 molar alum and 0.00132 molar aluminium chloride to which have been added varying quantities of sodium hydroxide. The pH was determined colorimetrically. The pH value at which alum solutions flocculate most rapidly is at or near the value of 5.5. For aluminium chloride the pH value is 8.0. This illustrates the point just discussed—that the hydrion concentration at which the rate of floc formation is greatest may be varied by a change in the anion content of the solution. The far greater molar concentration of aluminium chloride (as compared to alum) necessary to produce a floc within a few minutes is an added proof of the strong coagulating action of the sulphate ion.

It has been stated in this paper that 0.005 molar solutions of aluminium chloride do not flocculate with increased additions of sodium hydroxide until practically three mols of sodium hydroxide per mol of aluminium chloride have been added, this mixture having a hydrion concentration of about pH 8.5. At lower pH values a colloidal suspension forms giving the solution an opalescent appearance. The addition of sodium sulphate to these colloidal suspensions causes flocculation to take place. In Table 11 are given data showing the smallest quantities of sodium sulphate which, when added to one liter quantities of 0.005 molar aluminium chloride-sodium hydroxide mixtures cause complete flocculation of the colloidal material, leaving the supernatant liquid clear and sparkling after the floc has settled. As the pH of the solution increases, it requires less and less sulphate ion to cause flocculation, until at pH 9.0 flocculation occurs spontaneously.

TABLE 11.—*Smallest quantity of Na_2SO_4 that will cause flocculation of NaOH mixtures at different pH values*

Experiment No.	pH	Equivalents NaOH per mol $AlCl_3$	Equivalents Na_2SO_4 per mol $AlCl_3$	Experiment No.	pH	Equivalents NaOH per mol $AlCl_3$	Equivalents Na_2SO_4 per mol $AlCl_3$
13	4.6	2.00	0.7	27	8.4	2.90	0.2
16	4.9	2.40	0.7	31	9.0	3.10	0
21	6.8	2.75	0.3				

The results obtained in this investigation may serve to explain the reason for the variable results obtained by different investigators relative to the region of pH over which flocculation occurs in water purification and to the region in which considerable soluble aluminium is found in the filter effluent. The cause, in all probability, lies in the effect of the negative ions present in the raw water or which are subsequently added, and, perhaps, also to organic and colloidal matter likewise present in the raw water. (See Baylis, 1923, and Smith, 1920.) That the results of different investigators for alum do not

differ as widely as the results described in this paper is probably due to the strong influence of the divalent negative sulphate ion in coagulating the insoluble aluminium compound formed.

The effect of different anions in determining the hydrion zone of flocculation is not limited to the aluminium precipitate. Experiments upon ferric chloride and ferric sulphate show that the same principles apply there. It seems altogether probable that these principles will likewise apply to many of the metals which form insoluble hydroxides. The application of these principles should be of importance to such industries as, for example, the paper and mordant dyeing industries which make use of metallic hydroxide precipitate. The power to control the formation of a precipitate in one pH range or prevent it in another by a variation of anion, or the knowledge that the removal of interfering anions will improve the character of the precipitate, must certainly find application in many ways.

In water purification by alum there are at least three chemical factors necessary for successful clarification: (1) There must be added a certain minimum quantity of aluminium ion; (2) there must be present an anion of strong coagulating power, such as the sulphate ion; (3) the hydrion concentration must be properly adjusted. As the work of Theriault and Clark (1923) and of Langelier (1923) suggest, and as the work of Baylis (1923) proves, it may be cheaper to add a minimum quantity of alum and adjust to the desired pH value by the addition of mineral acid than to add a larger quantity of alum. Under certain conditions the purchase or manufacture of an acid alum may prove to be more economical. Likewise, for a water of low alkalinity which requires an alum-lime dosage it may prove profitable to use a basic alum together with slight additions of acid or lime to secure the proper hydrion concentration. Or it may be that a source of aluminium ion other than alum may be found sufficiently cheap to warrant its use together with a larger quantity of sulphuric acid, the latter to be the source of sulphate ion and the means of adjusting hydrion concentration. It is not the purpose of this paper to discuss relative costs or to suggest new methods of alum manufacture. It is merely desired to point out a few rather obvious possibilities for the application of the principles discussed. The alert engineer will make use of these or any other applications which appear feasible. In closing let it be again emphasized that the sulphate ion and the aluminium ion are of coordinate importance in water clarification. In buying aluminium sulphate the water works superintendent purchases two values: a potential supply of aluminium ion which with alkaline waters will form an insoluble material and a potential supply of sulphate ion which of all ions studied is best qualified to yield a suitable floc. It is indeed fortunate for the progress of water purification by coagulants that one of the

earliest and cheapest commercial methods discovered for the formation of aluminium compounds chanced to be the reaction of sulphuric acid with bauxite.

The above considerations apply to those procedures in water clarification which make use of the properties of the ordinary floc. There are, however, phases of water clarification such as the removal of certain types of color where other aspects of the problem must be considered. These we shall treat in a subsequent paper.

In this article the importance of the negative ion content of the solution in relation to some of the chemical and physical properties of alum floc has been established. The bearing upon water purification by the alum process has been discussed. In this connection the effect of several negative ions upon the form of the electrometric titration curve has been demonstrated. The relation of hydrion concentration and anion content of the solution to the formation of the aluminium precipitate has been determined for several anions. The dependence of the physical state of the insoluble aluminium compounds formed—their existence in colloidal suspension or as coagulated precipitate—upon the anions present has been emphasized. The lack of agreement in the literature upon the region of hydrion concentration in which coagulation of alum takes place has been explained as partially due to the negative ion content of the solutions in question and to the presence of colloidal material such as silicic acid or organic matter. The relation of "hydrion zone of coagulation" to "hydrion zone of rapid coagulation" for aluminium sulphate and aluminium chloride has been determined. For aluminium sulphate it has been demonstrated that the "hydrion zone of rapid coagulation" tends to shift towards the more acid portion of the "hydrion zone of coagulation." A few possible applications of the principles discussed in this paper have been pointed out, and in particular the coordinate importance of the aluminium ion and of the sulphate ion for current water works practice has been emphasized.

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CONFERENCE BOARD OF PHYSICIANS IN INDUSTRY

Abstracts of Minutes of Meeting held in New York, January 16, 1925

Below are printed brief abstracts of the minutes of the recent meeting of the Conference Board of Physicians in Industry. Inasmuch as the conference board represents a group of physicians in industrial concerns employing between 600,000 and 700,000 persons, it is believed that their opinions may be of considerable interest and importance.

ABSTRACTS OF MINUTES OF FORTY-SIXTH MEETING, CONFERENCE BOARD OF PHYSICIANS IN INDUSTRY, HELD IN NEW YORK JANUARY 16, 1925

At its forty-sixth meeting, held in New York, January 16, 1925, the Conference Board of Physicians in Industry reviewed the methods in use for the care of trivial injuries. While it was agreed that many trifling injuries created no disability and required no redressing, it was also stated that many serious infections entailing much loss of time and production arose from the neglect of such cases. This was emphasized by figures on infections submitted by the members. Over 2,000 infection cases were reported among 32,500 workers during 1924, and of this number only about 20 had received treatment prior to the appearance of the infection. It was thus seen that where prompt medical attention is given to injuries, infections are practically eliminated, and that practically all infections in such injuries result from delay in reporting for treatment.

In view of the experience of the members as noted above, it was the consensus of opinion that all industrial injuries should have first-aid treatment, which, in the absence of physician or nurse, might be given by a trained first-aid attendant. Where this is done and the employee continues at his regular work without visiting the medical department, a record of the case should be made by the one rendering the

initial treatment and sent immediately to the medical department. The physician should either see these cases or obtain a report on them within 24 or 48 hours. It is much better for the physician or nurse to treat all injuries, but in large plants, particularly those with scattered units, this is not practicable, and, under the circumstances, the services of trained first-aid attendants may be utilized.

The treatment of more serious cases was also discussed, particularly those cases drawing compensation benefits. In the experience of the members, the most beneficial results to the worker who is recovering from an injury are obtained in cases where he is returned to employment pending complete recovery. Certain types of workers are unfavorably influenced by prolonged periods of idleness pending complete recovery, and it is hard to get such persons to again take up their usual employment. Compensation boards frequently permit the worker to prolong his idleness on the ground that he has not recovered from the effects of the injury.

It was the unanimous conclusion of the board that these practices were factors in delayed recovery and in the development of traumatic neuroses and certain cases of malingering. It was urged that compensation boards give more careful consideration to the question of returning the injured worker to some sort of employment as soon as it was safe to do so. It has been the experience of members that many injured workers will do better active work with the injured part at their regular occupation than they will by going through passive movements and specified active exercises at home or in a physiotherapeutic clinic. The mental stimulation which comes from regular employment is much more beneficial than that obtained in a clinic where the patient has nothing to divert his attention from his own injuries and those of others around him.

It is realized that in many cases a certain amount of physiotherapeutic treatment is necessary before any work can be attempted. The board believes, however, that supervised active motion of the previously injured part, carried out as work in the factory, leads to recovery more promptly than any other form of treatment.

F. L. Rector, M. D.,
Secretary, Conference Board of Physicians in Industry.

DEATHS DURING WEEK ENDED FEBRUARY 7, 1925

Summary of information received by telegraph from industrial insurance companies for week ended February 7, 1925, and corresponding week of 1924. (From the Weekly Health Index, February 10, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended Feb. 7, 1925	Corresponding week, 1924
Policies in force	58, 552, 142	54, 928, 791
Number of death claims	11, 254	10, 730
Death claims per 1,000 policies in force, annual rate	10. 0	10. 2

Deaths from all causes in certain large cities of the United States during the week ended February 7, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, February 10, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Feb. 7, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Feb. 7, 1925 [2]
	Total deaths	Death rate [1]		Week ended Feb. 7, 1925	Corresponding week, 1924	
Total (64 cities)	7,621	14.4	[3] 14.0	922	[3] 916	
Akron	51			9	5	99
Albany [4]	44	19.2	22.4	6	4	133
Atlanta	69	15.5	22.9	6	20	
Baltimore [4]	255	16.7	17.5	34	30	99
Birmingham	71	18.0	21.8	8	8	
Boston	289	19.2	14.4	35	28	93
Bridgeport	27			3	5	48
Buffalo	129	12.1	13.4	20	23	81
Cambridge	35	16.2	9.8	2	2	34
Camden	36	14.6	11.1	4	6	66
Chicago [4]	753	13.1	12.0	121	105	107
Cincinnati	132	16.8	18.5	12	12	71
Cleveland	200	11.6	10.9	25	20	62
Columbus	79	15.0	13.6	9	1	85
Dallas	61	16.4	13.0	7	6	
Dayton	41	12.4	15.1	3	6	48
Denver	76			7	8	
Des Moines	32	11.2	9.0	3	3	51
Detroit	273			49	38	83
Duluth	31	14.6	8.7	2	2	42
Erie	22			5	6	98
Fall River [4]	25	10.8	10.8	4	7	58
Flint	24			6	8	99
Fort Worth	29	9.9	9.5	2	0	
Grand Rapids	33	11.4	14.4	6	9	93
Houston	55			10	3	
Indianapolis	90	13.1	13.5	9	10	62
Jacksonville, Fla	44	21.9	20.9	3	8	67
Jersey City	84	13.9	14.2	12	10	84
Kansas City, Kans	30	12.6	12.8	4	3	84
Kansas City, Mo	97	13.8	14.8	11	12	
Los Angeles	262			24	23	67
Louisville	78	15.7	18.8	12	12	105
Lowell	39	17.5	10.8	11	6	191
Lynn	32	15.9	14.1	4	3	106
Memphis	68	20.3	20.6	12	8	
Milwaukee	107	11.1	11.8	24	13	110
Minneapolis	93	11.4	10.7	9	11	48
Nashville [4]	44	18.5	18.2	0	11	
New Bedford	29	11.2	11.8	5	9	83
New Haven	41	11.9	19.6	3	9	39
New Orleans	165	20.8	22.7	17	18	
New York	1,689	14.4	13.5	180	176	72
Bronx Borough	204	11.8	10.1	24	16	83
Brooklyn Borough	531	12.4	12.0	55	61	58
Manhattan Borough	755	17.4	17.1	87	86	87
Queens Borough	150	13.6	10.3	10	10	50
Richmond Borough	49	19.1	14.8	4	3	72
Newark, N. J	97	11.2	10.1	10	10	46
Norfolk	30	9.2	9.5	5	5	89
Oakland	48	9.9	12.7	7	6	82
Oklahoma City	29	14.2	8.5	2	0	
Omaha	77	19.0	10.5	8	5	77
Paterson	27	9.9	11.1	2	4	34
Philadelphia	584	15.4	13.6	73	69	92
Pittsburgh	234	19.3	18.6	37	42	130
Portland, Oreg	61	11.3	10.9	8	4	83
Providence	89	18.9	17.1	11	19	88
Richmond	60	16.8	17.0	10	11	121
Rochester	85	13.4		12		95
St. Louis	247	15.7	15.7	22	25	
St. Paul	55	11.7	14.3	2	8	17
Salt Lake City [4]	25	10.0	13.0	4	8	63

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 63 cities.
[4] Deaths for week ended Friday, February 6, 1925.

Deaths from all causes in certain large cities of the United States during the week ended February 7, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, February 10, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Feb. 7, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Feb. 7, 1925
	Total deaths	Death rate		Week ended Feb. 7, 1925	Corresponding week, 1924	
San Antonio	62	16.3	21.8	9	12	
San Francisco	146	13.7	14.6	12	11	69
Schenectady	17	8.7	13.5	2	4	56
Seattle	63			6	6	61
Somerville	20	10.2	9.3	1	4	27
Spokane	27			3	3	65
Springfield, Mass	48	16 4	9.5	8	2	119
Syracuse	56	15.2	12.8	4	5	50
Tacoma	17	8 5	7.1	1	1	24
Toledo	73	13 2	14.5	5	8	45
Trenton	56	22.1	15.7	8	6	130
Washington, D. C	143	15.0	14.2	10	16	56
Waterbury	27			4	6	88
Wilmington, Del	36	15.4	10.4	7	2	160
Worcester	55	14.4	16.8	6	10	69
Yonkers	23	10.7	11.4	4	4	88
Youngstown	38	12.4	14.5	7	4	89

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended February 14, 1925

ALABAMA

	Cases
Chicken pox	33
Diphtheria	11
Dysentery	3
Influenza	758
Lethargic encephalitis	2
Malaria	9
Measles	40
Mumps	51
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pellagra	2
Pneumonia	192
Scarlet fever	26
Smallpox	216
Tetanus	1
Trachoma	10
Tuberculosis	29
Typhoid fever	13
Whooping cough	32

ARKANSAS

	Cases
Cerebrospinal meningitis	1
Chicken pox	45
Diphtheria	16
Influenza	245
Malaria	18
Measles	27
Mumps	89
Pellagra	2
Scarlet fever	25
Smallpox	18
Tuberculosis	15
Typhoid fever	6
Whooping cough	21

CALIFORNIA

	Cases
Cerebrospinal meningitis—San Bernardino County	1
Diphtheria	130
Influenza	77
Lethargic encephalitis—Alameda	1
Measles	28
Poliomyelitis:	
Hanford	1
Kings County	1
Long Beach	1
North Sacramento	1
Oakland	1
Scarlet fever	137
Smallpox:	
Los Angeles	50
Oakland	14
San Diego	14
San Francisco	9
Scattering	50
Typhoid fever	5

CONNECTICUT

	Cases
Chicken pox	88
Diphtheria	50
German measles	45
Influenza	21
Lethargic encephalitis	1
Measles	68
Mumps	35
Paratyphoid fever	1
Pneumonia (all forms)	119
Scarlet fever	194
Septic sore throat	7
Trichinosis	1
Tuberculosis (all forms)	23
Typhoid fever	8
Whooping cough	65

DELAWARE

	Cases
Chicken pox	5
Diphtheria	2
Influenza	8
Mumps	5
Pneumonia	4
Scarlet fever	11
Tuberculosis	7
Typhoid fever	4
Whooping cough	1

FLORIDA

	Cases
Diphtheria	8
Influenza	55
Malaria	7
Pneumonia	3
Scarlet fever	2
Smallpox	1
Typhoid fever	20

GEORGIA

	Cases
Cerebrospinal meningitis	1
Chicken pox	58
Conjunctivitis (infectious)	3
Dengue	1
Diphtheria	31
Dysentery	4
Hookworm disease	8
Influenza	956
Lethargic encephalitis	1
Malaria	24
Measles	5
Mumps	62
Pellagra	9
Pneumonia	127
Rabies in man	1
Scarlet fever	14
Septic sore throat	8
Smallpox	13
Tuberculosis (pulmonary)	39
Typhoid fever	13
Whooping cough	45

ILLINOIS

	Cases
Cerebrospinal meningitis:	
Madison County	1
Montgomery County	1
Diphtheria:	
Cook County	68
Scattering	41
Influenza	33
Measles	635
Pneumonia	365
Poliomyelitis—Cook County	1
Scarlet fever:	
Cook County	311
Jefferson County	27
Kane County	17
Madison County	11
Peoria County	10
Rock Island County	10
St. Clair County	17
Schuyler County	12
Will County	14
Scattering	113

ILLINOIS—continued

	Cases
Smallpox:	
Madison County	9
St. Clair County	10
Scattering	26
Tuberculosis	211
Typhoid fever	10
Whooping cough	296

INDIANA

	Cases
Chicken pox	119
Diphtheria	40
Influenza	101
Measles	140
Mumps	4
Pneumonia	15
Scarlet fever:	
Allen County	22
Clark County	25
Delaware County	9
Elkhart County	14
Fulton County	10
Huntington County	13
St. Joseph County	32
Scattering	91
Smallpox	
Decatur County	20
Kosciusko County	12
Miami County	9
Vigo County	15
Scattering	75
Trachoma	1
Tuberculosis	34
Typhoid fever	3
Whooping cough	23

IOWA

	Cases
Diphtheria	18
Scarlet fever	38
Smallpox	25

KANSAS

	Cases
Chicken pox	128
Diphtheria	22
German measles	1
Influenza	21
Lethargic encephalitis	3
Malaria	1
Measles	8
Mumps	503
Pneumonia	46
Scarlet fever	101
Smallpox	4
Tuberculosis	10
Typhoid fever	1
Whooping cough	23

LOUISIANA

	Cases
Diphtheria	16
Influenza	56
Malaria	1
Pneumonia	65
Scarlet fever	14
Smallpox	24
Tuberculosis	30
Typhoid fever	18
Whooping cough	8

MAINE

	Cases
Cerebrospinal meningitis	1
Chicken pox	43
Diphtheria	4
German measles	15
Influenza	11
Influenza reported as "devil's grip"	4
Measles	1
Mumps	72
Pneumonia	9
Scarlet fever	20
Septic sore throat	2
Tuberculosis	11
Typhoid fever	2
Whooping cough	1

MARYLAND [1]

Cerebrospinal meningitis	1
Chicken pox	94
Diphtheria	54
German measles	7
Lethargic encephalitis	1
Influenza	130
Measles	92
Mumps	67
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pneumonia (all forms)	169
Scarlet fever	144
Septic sore throat	3
Tuberculosis	66
Typhoid fever	6
Whooping cough	123

MASSACHUSETTS

Actinomycosis	1
Cerebrospinal meningitis	3
Chicken pox	247
Conjunctivitis (suppurative)	30
Diphtheria	136
German measles	538
Influenza	89
Lethargic encephalitis	3
Measles	572
Mumps	92
Ophthalmia neonatorum	40
Pneumonia (lobar)	243
Poliomyelitis	1
Scarlet fever	410
Septic sore throat	5
Tetanus	1
Trichinosis	1
Tuberculosis (all forms)	158
Typhoid fever	14
Whooping cough	170

MICHIGAN

Diphtheria	69
Measles	204
Pneumonia	116
Scarlet fever	348
Smallpox	8
Tuberculosis	57
Typhoid fever	6
Whooping cough	80

[1] Week ended Friday.

MINNESOTA

	Cases
Chicken pox	118
Diphtheria	73
Lethargic encephalitis	1
Measles	38
Pneumonia	7
Scarlet fever	245
Smallpox	76
Tuberculosis	45
Typhoid fever	3
Whooping cough	40

MISSISSIPPI

Cerebrospinal meningitis	1
Diphtheria	12
Influenza	399
Scarlet fever	2
Smallpox	15
Typhoid fever	3

MISSOURI

(Exclusive of Kansas City)

Chicken pox	72
Diphtheria	73
Influenza	22
Lethargic encephalitis	1
Measles	3
Mumps	53
Ophthalmia neonatorum	1
Pneumonia	7
Scarlet fever	190
Smallpox	14
Trachoma	2
Tuberculosis	32
Typhoid fever	2
Whooping cough	10

MONTANA

Diphtheria	6
Scarlet fever	30
Smallpox	40

NEW JERSEY

Cerebrospinal meningitis	2
Chicken pox	187
Diphtheria	89
Influenza	20
Measles	128
Pneumonia	160
Scarlet fever	286
Smallpox	3
Trachoma	1
Typhoid fever	5
Whooping cough	191

NEW MEXICO

Chicken pox	14
Diphtheria	14
German measles	1
Influenza	45
Measles	48
Mumps	8
Pneumonia	26
Scarlet fever	8
Septic sore throat	1

NEW MEXICO—continued

	Cases
Trachoma	1
Tuberculosis	15
Typhoid fever	1
Whooping cough	6

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	1
Diphtheria	111
Influenza	45
Lethargic encephalitis	6
Measles	252
Pneumonia	368
Poliomyelitis	2
Scarlet fever	346
Smallpox	9
Typhoid fever	13
Whooping cough	242

NORTH CAROLINA

Cerebrospinal meningitis	1
Chicken pox	122
Diphtheria	32
Measles	19
Ophthalmia neonatorum	1
Scarlet fever	37
Septic sore throat	1
Smallpox	84
Whooping cough	91

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Chicken pox	26
Diphtheria	22
Influenza	456
Pneumonia	173
Scarlet fever	38
Smallpox	14
Typhoid fever	11

OREGON

Chicken pox	21
Diphtheria:	
Portland	17
Scattering	8
Lethargic encephalitis	[1] 1
Measles	6
Mumps	18
Pneumonia	6
Poliomyelitis	1
Scarlet fever	22
Smallpox:	
Portland	17
Scattering	2
Typhoid fever	4
Whooping cough	16

SOUTH DAKOTA

Chicken pox	7
Diphtheria	1
Mumps	1
Pneumonia	2
Scarlet fever	35
Smallpox	2
Typhoid fever	1
Whooping cough	3

[1] Death.

TEXAS

	Cases
Anthrax	1
Chicken pox	167
Dengue	36
Diphtheria	62
Dysentery (epidemic)	6
Influenza	4,961
Lethargic encephalitis	2
Malta fever	1
Measles	173
Mumps	188
Ophthalmia neonatorum	2
Paratyphoid fever	4
Pellagra	20
Pneumonia	481
Scarlet fever	59
Smallpox	47
Trachoma	2
Tuberculosis	107
Typhoid fever	10
Whooping cough	215

VERMONT

Chicken pox	38
Diphtheria	5
Measles	4
Mumps	48
Scarlet fever	8
Typhoid fever	2
Whooping cough	3

VIRGINIA

Smallpox—Fairfax County	1

WASHINGTON

Chicken pox	125
Diphtheria	40
German measles	105
Lethargic encephalitis	1
Measles	4
Mumps	107
Pneumonia	2
Poliomyelitis—Lewis County	1
Scarlet fever	41
Smallpox	19
Tuberculosis	56
Typhoid fever	10
Whooping cough	3

WEST VIRGINIA

Cerebrospinal meningitis—Wheeling	1
Diphtheria	8
Scarlet fever	7
Smallpox	7

WISCONSIN

Milwaukee:	
Cerebrospinal meningitis	1
Chicken pox	43
Diphtheria	17
German measles	345
Measles	284
Mumps	75
Pneumonia	6
Poliomyelitis	1
Scarlet fever	25
Smallpox	7
Tuberculosis	16
Whooping cough	82

WISCONSIN—continued

Scattering:	Cases
Chicken pox	203
Diphtheria	29
German measles	9
Influenza	83
Measles	138
Mumps	67
Pneumonia	14
Poliomyelitis	3
Scarlet fever	134
Smallpox	57

WISCONSIN—continued

Scattering—Continued	Cases
Tuberculosis	21
Typhoid fever	2
Whooping cough	46

WYOMING

	Cases
Chicken pox	12
Diphtheria	1
Measles	2
Mumps	3
Pneumonia	2
Scarlet fever	2

Reports for Week Ended February 7, 1925

NEBRASKA

	Cases
Chicken pox	31
Diphtheria	12
German measles	1
Influenza	30
Measles	2
Mumps	3
Pneumonia	2
Scarlet fever	29
Septic sore throat	1
Smallpox	28
Tuberculosis	1
Typhoid fever	3
Whooping cough	3

NORTH DAKOTA

	Cases
Cerebrospinal meningitis	1
Chicken pox	3
Diphtheria	5
German measles	1
Measles	1
Pneumonia	14
Scarlet fever	55
Smallpox	3
Tuberculosis	1
Whooping cough	4

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
December, 1924										
Wyoming		1			2			16	10	
January, 1925										
Arizona		13			290			29	83	1
Connecticut	5	246	28	1	232		3	814	0	16
Indiana	2	257	383				2	927		55
Michigan		421	30	1	707		6	1,310	151	54
Missouri	5	355	114	2	30	0	1	1,242	56	17
Vermont		10			8			104		4
Wyoming		7	1		5			37	7	1

Number of Cases of Certain Communicable Diseases Reported for the Month of November, 1924, by State Health Officers

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	175	180	59	79	117	182	107	75	61
Arizona	20	16	36	61	39	31	45	10	14
Arkansas	61	53	17	20	24	64	[1] 35	96	40
California	932	787	120	316	543	383	640	158	320
Colorado [5]									
Connecticut	245	221	22	66	432	4	125	12	302
Delaware	4	25	1	3	14		7	2	4
District of Columbia	91	56	2		74	1	117	7	36
Florida	4	95	2	64	15	1	128	50	19
Georgia	74	137	4	54	36	8	[1] 74	35	27
Idaho		10			28			3	
Illinois	1,651	693	343	367	1,105	58	880	125	875
Indiana		472			563			77	
Iowa	84	82	4	19	160	105		(2)	4
Kansas	639	139	16	382	439	7	193	48	98
Kentucky [3]									
Louisiana	6	130	1	1	42	20	[1] 109	118	17
Maine	299	133	29	225	178		38	35	48
Maryland	258	248	82	29	190		228	61	332
Massachusetts	906	620	379	309	937		498	44	305
Michigan	1,192	565	403	178	1,018	91	463	92	302
Minnesota	855	491	59		836	448	245	12	120
Mississippi	342	173	64	708	79	92	255	220	417
Missouri	209	522	26	66	1,025	37	160	73	47
Montana	158	54	24	9	105	75	35	7	25
Nebraska		94			120			2	
Nevada [4]									
New Hampshire [4]									
New Jersey	715	364	133		518	14	365	72	703
New Mexico [5]									
New York	2,008	1,202	551	722	1,468	156	1,702	286	1,126
North Carolina	529	555	154		278			56	360
North Dakota	92	14	68	2	134	39	12	3	32
Ohio	2,118	684	125	397	1,466	360	489	107	502
Oklahoma	22	94	2	3	88	17	26	126	19
Oregon	133	173	24	13	134	39	53	12	
Pennsylvania	3,133	1,295	1,147	1,518	1,948	17	460	180	1,201
Rhode Island		57			97	3		10	
South Carolina	33	309	1	34	7	25	5	5	20
South Dakota	109	53	6	15	187	49	3	16	19
Tennessee	242	122	28	2	168	39	120	166	108
Texas [3]									
Utah	769	108	134	17	60	17	6	22	66
Vermont	169	29	116	85	79		[1] 18	2	191
Virginia	567	674	207		331	3	[1] 295	79	639
Washington	552	148	39	128	159	97	120	22	27
West Virginia	385	236	70		325	35	36	76	88
Wisconsin	1,152	242	257	317	452	68	136	10	507
Wyoming	55	3	55	17	20	12	1	1	6

[1] Pulmonary.
[2] Reports not required by law.
[3] Reports received weekly.
[4] Reports received annually.
[5] Reports not received at time of going to press.

Case Rates per 1,000 Population (Annual Basis) for the Month of November, 1924

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	0.87	0.90	0.29	0.39	0.58	0.91	0.53	0.37	0.30
Arizona	.62	.50	1.11	1.89	1.21	.96	1.39	.31	.43
Arkansas	.41	.35	.11	.13	.16	.43	[1].23	.64	.27
California	2.91	2.45	.37	.99	1.69	1.19	2.00	.49	1.00
Colorado [1]									
Connecticut	1.99	1.79	.18	.54	3.50	.03	1.01	.10	2.45
Delaware	.21	1.31	.05	.16	.73		.37	.10	.21
District of Columbia	2.54	1.56	.06		2.06	.03	3.26	.20	1.00
Florida	.05	1.08	.02	.73	.17	.01	1.46	.57	.22
Georgia	.30	.55	.02	.22	.15	.03	[1].80	.14	.11
Idaho		.25			.71			.08	
Illinois	2.93	1.23	.61	.65	1.96	.10	1.56	.22	1.55
Indiana		1.90			2.26			.31	

[1] Reports not received at time of going to press.

Case Rates per 1,000 Population (Annual Basis) for the Month of November, 1924—Continued

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Iowa	0.41	0.40	0.02	0.09	0.78	0.52		(2)	0.02
Kansas	4.32	.94	.11	2.58	2.97	.05	1.30	0.32	.66
Kentucky [3]									
Louisiana	.04	.85	.01	.01	.27	.13	[4] .71	.77	.11
Maine	4.68	2.08	.45	3.52	2.78		.59	.55	.75
Maryland	2.07	1.99	.66	.23	1.60		1.83	.49	2.66
Massachusetts	2.71	1.86	1.13	.92	2.80		1.49	.13	.91
Michigan	3.58	1.70	1.21	.53	3.05	.27	1.39	.28	.91
Minnesota	4.12	2.37	.28		4.03	2.16	1.18	.06	.58
Mississippi	2.33	1.18	.44	4.82	.54	.63	1.74	1.50	2.84
Missouri	.74	1.84	.09	.23	3.62	.13	.56	.26	.17
Montana	3.06	1.05	.47	.17	2.04	1.45	.68	.14	.48
Nebraska		.85			1.09			.02	
Nevada [4]									
New Hampshire [4]									
New Jersey	2.53	1.29	.47		1.84	.05	1.29	.26	2.49
New Mexico [1]									
New York	2.23	1.34	.61	.80	1.63	.17	1.89	.32	1.25
North Carolina	2.37	2.49	.69		1.25			.25	1.61
North Dakota	1.65	.25	1.22	.04	2.41	.70	.22	.05	.57
Ohio	4.15	1.34	.25	.78	2.88	.71	.96	.21	.98
Oklahoma	.12	.52	.01	.02	.49	.09	.14	.70	.11
Oregon	1.94	2.53	.35	.19	1.96	.57	.77	.18	
Pennsylvania	4.15	1.72	1.52	2.01	2.58	.02	.61	.24	1.59
Rhode Island		1.10			1.87	.06		.19	
South Carolina	.23	2.76	.01	.24	.05	.17	[4] .03	.03	.14
South Dakota	2.01	.98	.11	.28	3.45	.90	.06	.30	.35
Tennessee	1.23	.62	.14	.01	.85	.20	.61	.84	.55
Texas [5]									
Utah	19.36	2.72	3.37	.43	1.51	.43	.15	.55	1.66
Vermont	5.85	1.00	4.02	2.94	2.73		[4] .62	.07	6.61
Virginia	2.85	3.39	1.04		1.67	.02	[4] 1.48	.40	3.22
Washington	4.62	1.24	.33	1.07	1.33	.81	1.01	.18	.23
West Virginia	2.98	1.83	.54		2.52	.27	.28	.59	.68
Wisconsin	5.07	1.07	1.13	1.40	1.99	.30	.60	.04	2.23
Wyoming	3.09	.17	3.09	.96	1.63	.68	.06	.06	.34

[1] Reports not received at time of going to press.
[2] Reports not required by law.
[3] Reports received weekly.
[4] Pulmonary.
[5] Reports received annually.

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended January 31, 1925:

Los Angeles, Calif.

Week ended January 31, 1925:

Number of rats examined	4,076
Number of rats found to be plague infected	3
Number of squirrels examined	54
Number of squirrels found to be plague infected	0

Totals to January 31, 1925:

Number of rats examined	42,249
Number of rats found to be plague infected	81
Number of squirrels examined	1,573
Number of squirrels found to be plague infected	0

Oakland, Calif.

Week ended January 31, 1925:

Number of rats trapped	3,066
Number of rats found to be plague infected	1

Totals to January 31, 1925:

Number of rats trapped	7,343
Number of rats found to be plague infected	14

New Orleans, La.

Week ended January 31, 1925:	
Number of vessels inspected	337
Number of inspections made	795
Number of vessels fumigated with cyanide gas	41
Number of rodents examined for plague	4, 452
Number of rodents found to be plague infected	0
Totals to January 31, 1925:	
Number of rodents examined	26, 837
Number of rodents found to be plague infected	12

SMALLPOX IN TEXAS CITIES

Under date of February 12, 1925, 18 cases of smallpox were reported at Beaumont, Tex., and about 200 cases at Port Arthur. Cases of the disease have also been reported from Tyler, Galveston, Houston, and other Texas cities.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended January 31, 1925, 35 States reported 1,599 cases of diphtheria. For the week ended February 2, 1924, the same States reported 2,316 cases of this disease. One hundred and three cities, situated in all parts of the country and having an aggregate population of nearly 28,300,000, reported 895 cases of diphtheria for the week ended January 31, 1925. Last year, for the corresponding week, they reported 1,265 cases. The estimated expectancy for these cities was 1,186 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty States reported 2,226 cases of measles for the week ended January 31, 1925, and 15,229 cases of this disease for the week ended February 2, 1924. One hundred and three cities reported 1,151 cases of measles for the week this year, and 5,458 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 34 States—this year, 3,969 cases, last year, 4,137; 103 cities—this year, 1,968, last year, 1,766; estimated expectancy, 1,046 cases.

Smallpox.—For the week ended January 31, 1925, 35 States reported 1,223 cases of smallpox. Last year, for the corresponding week, they reported 1,398 cases. One hundred and three cities reported smallpox for the week as follows: 1925, 373 cases; 1924, 333 cases; estimated expectancy, 92 cases. These cities reported 28 deaths from smallpox for the week this year, 17 of which occurred at Minneapolis.

Typhoid fever.—Two hundred and fifty-six cases of typhoid fever were reported for the week ended January 31, 1925, by 34 States. For the corresponding week of 1924 the same States reported 232 cases. One hundred and three cities reported 97 cases of typhoid

fever or the week this year, and 76 cases for the week last year. The estimated expectancy for these cities was 53 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 103 cities as follows: 1925, 1,216 deaths; 1924, 1,185 deaths.

City reports for week ended January 31, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	15	2	2	0	0	0	24	5
New Hampshire:									
Concord	22,408	0	0	0	0	0	0	0	2
Vermont:									
Barre	[1] 10,008	0	0	0	0	0	0	17	1
Burlington	23,613	0	1	0	0	0	0	9	0
Massachusetts:									
Boston	770,400	50	70	41	7	2	117	5	34
Fall River	120,912	5	7	3	3	2	0	1	8
Springfield	144,227	6	5	2	1	3	58	6	3
Worcester	191,927	25	6	2	0	0	4	3	8
Rhode Island:									
Pawtucket	68,799	1	2	2	0	0	0	0	4
Providence	242,378	0	13	6	0	1	4	0	7
Connecticut:									
Bridgeport	[1] 143,555	4	9	4	3	3	1	0	10
Hartford	[1] 138,036	9	8	18	0	0	1	3	1
New Haven	172,967	15	4	0	0	0	10	0	14
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	12	26	7	7	0	27	4	20
New York	5,927,625	180	232	185	59	16	57	32	262
Rochester	317,867	5	10	2	0	0	10	31	6
Syracuse	184,511	6	9	3	0	0	2	2	2
New Jersey:									
Camden	124,157	6	5	2	0	0	8	0	5
Newark	438,699		25						
Trenton	127,390	3	8	3	0	1	19	0	5
Pennsylvania:									
Philadelphia	1,922,788	127	76	88		5	97	39	96
Pittsburgh	613,442	35	26	9		7	153	28	44
Reading	110,917	20	5	1	0	0	2	2	3
Scranton	140,636	3	6	5	0	1	0	0	10
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	14	12	7		3	0	5	14
Cleveland	888,519	61	34	30	14	0	2	14	25
Columbus	261,082	13	5	2	0	2	1	4	5
Toledo	268,338	18	7	14	0	0	40	4	4
Indiana:									
Fort Wayne	93,573	5	4	5	0	0	0	0	3
Indianapolis	342,718	52	17	1		2	1	17	11
South Bend	76,709	8	1	0	0	0	4	0	3
Terre Haute	68,939	0	2	1	0	0	0	0	3

[1] Population Jan. 1, 1920.

City reports for week ended January 31, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST NORTH CENTRAL—continued									
Illinois:									
Chicago	2,886,121	92	126	67	10	3	238	23	77
Cicero	55,968	0	2	2	0	0	15	0	0
Peoria	79,675	15	1	0	0	0	15	2	3
Springfield	61,833	3	2	8	0	0	1	18	3
Michigan:									
Detroit	995,668	51	71	40	4	4	4	5	44
Flint	117,968	8	10	2	0	0	1	5	1
Grand Rapids	145,947	6	4	2	1	0	12	2	2
Wisconsin:									
Madison	42,519	12	1	1	0	0	0	0	3
Milwaukee	484,595	32	21	11	2	2	219	58	0
Racine	64,393		1						
Superior	[1] 39,671	1	1	2	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	10	3	0	0	0	0	2	2
Minneapolis	409,125	86	21	30	0	0	1	3	10
St. Paul	241,891	30	14	22	0	0	1	48	8
Iowa:									
Davenport	61,262	5	1	5	0		0	0	
Des Moines	140,923	0	4	1	0		0	0	
Sioux City	79,662	2	1	1	0		0	3	
Waterloo	39,667		1	0	0		0		
Missouri:									
Kansas City	351,819	17	11	6	8	7	3	16	18
St. Joseph	78,232	2	3	3	0	0	1	0	3
St. Louis	803,853	26	52	53	0	0	2	2	
North Dakota:									
Fargo	24,841	7	1	0	0	0	0	7	0
Grand Forks	14,547	0	1	1	0		0	0	
South Dakota:									
Aberdeen	15,829	2		0	0		0	0	
Sioux Falls	29,206	1	1	0	0	0	0	0	0
Nebraska:									
Lincoln	58,761	3	2	4	0	0	3	1	2
Omaha	204,382	6	5	3	0	0	0	0	12
Kansas:									
Topeka	52,555	28	2	0	0	0	2	159	0
Wichita	79,261	15	3	2	0	0	0	2	1
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	1	2	4	0	0	2	0	1
Maryland:									
Baltimore	773,580	46	32	19	38	12	4	9	48
Cumberland	32,361		0	1	0	0	0		2
Frederick	11,301		1	0	0	0	0		1
District of Columbia:									
Washington	[1] 437,571	37	18	21	1	1	0		22
Virginia:									
Lynchburg	30,277	4	1	4	0	0	0	34	1
Norfolk	159,089	23	3	1	0	0	0	60	2
Richmond	181,044	4	5	6	0	2	1	0	4
Roanoke	55,502	4	2	2	0	0	1	0	4
West Virginia:									
Charleston	45,597	6	2	1	0	0	8	0	0
Huntington	57,918	0	1	0	0		0	0	
Wheeling	[1] 56,208	2	1	0	0	1	2	0	3
North Carolina:									
Raleigh	29,171	6	1	0	0	0	0	0	0
Wilmington	35,719	6	0	2	0	0	0	8	1
Winston-Salem	56,230	8	1	1	0	0	0	10	3
South Carolina:									
Charleston	71,245	1	2	0	0	0	0	0	4
Columbia	39,688	0	1	0	0	0	0	6	5
Greenville	25,789	0	0	0	0	0	0	0	1

[1] Population Jan. 1, 1920.

City reports for week ended January 31, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
SOUTH ATLANTIC—con.									
Georgia:									
Atlanta	222, 963	0	3	0	3	0	0	1	13
Brunswick	15, 937	0	0	0	39	0	0	0	1
Savannah	89, 448	0	1	1	28	3	0	13	4
Florida:									
St. Petersburg	24, 403	0	0	0	0	0	0	0	0
Tampa	56, 050	1	2	0	1	0	0	0	4
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57, 877	2	1	0	0	1	0	2	3
Louisville	257, 671	5	6	3	1	1	1	1	10
Tennessee:									
Memphis	170, 067	11	5	1		4	3	1	20
Nashville	121, 128	3	1	2	0	3	9	0	2
Alabama:									
Birmingham	195, 901	15	3	8	16	4	3	1	15
Mobile	63, 858	0	1	1	0	0	0	2	3
Montgomery	45, 383	0	1	2	2	0	0	2	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30, 635	2	1	1	0		0	0	
Little Rock	70, 916	1	1	1	2	0	0	0	1
Louisiana									
New Orleans	404, 575	6	15	12	30	8	2	0	0
Shreveport	54, 590	2		1	0	0	0	0	3
Oklahoma:									
Oklahoma	101, 150	2	2	1	0	2	1	1	5
Tulsa	102, 018		2	2	0		0		
Texas:									
Dallas	177, 274	6	6	5		4	1	1	11
Galveston	46, 877	0	1	1	0	0	0	0	6
Houston	154, 970	4	4	3	0	0	0	0	10
San Antonio	184, 727	0	2	8	4	4	0	0	14
MOUNTAIN									
Montana:									
Billings	16, 927	8	1	0	0	0	1	3	1
Great Falls	27, 787	0	1	1	0	0	22	1	0
Helena	[1] 12, 037		0	0	0	0	0		0
Missoula	[1] 12, 668		0	0	0	0	0		0
Idaho:									
Boise	22, 806	2	1	0	0	0	0	0	0
Colorado:									
Denver	272, 031	14	11	11	0	1	3	85	23
Pueblo	43, 519	7	3	1		3	0	12	6
New Mexico:									
Albuquerque	16, 648	3	0	0	0	0	0	0	1
Arizona:									
Phoenix	33, 899	0		1	0	1	3	0	3
Utah:									
Salt Lake City	126, 241	39	3	1	0	0	4	29	3
Nevada:									
Reno	12, 429	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315, 685	66	5	11	0		0	33	
Spokane	104, 573	20	3	14	0		0	0	
Tacoma	101, 731	9	2	6	0	0	1	4	4
Oregon:									
Portland	273, 621	11	7	24	0	0	3	0	0
California:									
Los Angeles	666, 853	84	46	47	14	3	3	25	42
Sacramento	69, 950	0	2	6	0	0	0	0	1
San Francisco	539, 038	27	27	17	25	2	2	33	6

[1] Population, Jan. 1, 1920.

City reports for week ended January 31, 1925—Continued

Division, State and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	2	2	0	0	0	1	1	1	2	2	23
New Hampshire:											
Concord	0	2	0	0	0	0	0	0	0	0	7
Vermont:											
Barre	1	1	0	0	0	1	0	0	0	0	2
Burlington	1	2	0	0	0	1	0	0	0	0	7
Massachusetts:											
Boston	54	106	0	0	0	17	1	0	0	34	247
Fall River	3	1	0	0	0	3	1	0	0	5	43
Springfield	9	21	0	0	0	0	0	2	0	5	45
Worcester	10	8	0	0	0	2	0	0	0	4	53
Rhode Island:											
Pawtucket	1	2	0	0	0	0	0	0	0	0	27
Providence	9	14	0	0	0	3	0	0	1	0	76
Connecticut:											
Bridgeport	6	21	1	0	0	1	0	0	0	0	33
Hartford	6	13	0	0	0	0	0	0	0	16	34
New Haven	8	24	0	0	0	1	1	0	0	5	57
MIDDLE ATLANTIC											
New York:											
Buffalo	21	16	1	1	0	11	1	7	0	24	127
New York	179	282	1	1	0	[1] 107	10	26	6	116	1,568
Rochester	11	42	0	0	0	4	1	0	0	4	65
Syracuse	16	3	0	0	0	1	1	0	0	0	44
New Jersey:											
Camden	2	7	0	9	4	2	0	0	0	0	37
Newark	22	----	0	----	----	----	0	----	----	----	----
Trenton	3	5	0	1	0	2	0	0	1	9	37
Pennsylvania:											
Philadelphia	58	178	1	5	1	31	3	2	0	82	619
Pittsburgh	23	59	0	0	0	8	1	1	1	3	194
Reading	2	2	0	0	0	2	1	1	0	8	27
Scranton	5	1	0	0	0	0	0	0	0	9	------
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	9	12	1	5	0	7	0	4	1	4	132
Cleveland	32	30	2	0	0	15	1	4	0	33	191
Columbus	8	23	1	13	0	1	1	1	0	4	89
Toledo	18	21	4	0	0	6	1	1	1	26	83
Indiana:											
Fort Wayne	3	7	1	0	0	1	0	0	0	2	32
Indianapolis	10	9	2	11	0	3	0	0	0	6	102
South Bend	3	13	1	0	0	0	0	0	0	0	28
Terre Haute	2	8	1	0	0	1	0	0	0	0	23
Illinois:											
Chicago	101	260	3	2	0	58	3	4	1	132	756
Cicero	1	6	0	0	0	0	0	0	0	3	9
Peoria	5	10	1	0	0	1	0	0	0	0	24
Springfield	2	1	0	0	0	0	0	0	0	0	15
Michigan:											
Detroit	84	84	4	8	1	20	1	0	0	38	249
Flint	8	6	2	0	0	1	0	0	0	1	23
Grand Rapids	8	23	1	0	0	0	0	0	0	3	34
Wisconsin:											
Madison	3	2	1	0	0	0	0	0	0	13	8
Milwaukee	39	19	1	2	0	2	1	0	0	23	79
Racine	7	----	0	----	----	----	0	----	----	----	----
Superior	2	3	4	0	0	0	0	0	0	0	4
WEST NORTH CENTRAL											
Minnesota:											
Duluth	5	26	1	3	0	0	1	0	0	0	19
Minneapolis	33	73	8	49	17	6	1	0	0	1	107
St. Paul	24	27	9	2	1	3	1	2	0	16	57

[1] Pulmonary tuberculosis only.

City reports for week ended January 31, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL—contd.											
Iowa:											
Davenport	2	4	2	3			0	0		1	
Des Moines	8	4	3	2			0	0		0	
Sioux City	2	0	1	0			0	0		0	
Waterloo	3	0	0	4			0	0		2	
Missouri:											
Kansas City	13	127	2	3	0	9	0	0	0	0	104
St. Joseph	3	5	0	0	0	0	0	0	0	0	27
St. Louis	28	97	1	10	0	10	1	4	0	6	231
North Dakota:											
Fargo	1	4	0	0	0	0	0	0	0	0	5
Grand Forks	3	0	1	0			0	0		0	
South Dakota:											
Aberdeen		1		0				0		0	
Sioux Falls	2	3	0	0	0	0	0	0	0	0	8
Nebraska:											
Lincoln	3	2	0	0	0	0	0	0	0	0	19
Omaha	6	4	2	23	0	1	0	0	0	2	66
Kansas:											
Topeka	2	3	1	0	0	0	0	0	0	1	11
Wichita	2	7	1	0	0	1	0	0	0	2	18
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	1	0	0	0	2	0	0	1	1	27
Maryland:											
Baltimore	37	47	1	0	0	20	2	3	0	66	262
Cumberland	1	1	0	0	0	0	0	0	0		18
Frederick	1	3	0	0	0	0	0	0	0		6
District of Columbia:											
Washington	20	29	1	1	1	8	1	2	0	11	153
Virginia:											
Lynchburg	0	0	0	0	0	1	0	0	0	5	8
Norfolk	1	2	1	0	0	3	0	0	0	14	
Richmond	5	0	0	0	0	10	0	1	0	0	61
Roanoke	1	1	0	0	0	1	0	0	0	1	20
West Virginia:											
Charleston	1	1	0	2	0	0	1	4	0	0	19
Huntington	1	1	0	2			0	0		0	
Wheeling	1	0	0	0	0	0	1	3	0	2	18
North Carolina:											
Raleigh	1	0	0	2	0	1	0	0	0	1	9
Wilmington	1	0	0	2	0	1	0	0	0	4	7
Winston-Salem	2	0	1	9	0	1	0	0	0	3	24
South Carolina:											
Charleston	2	0	0	0	0	1	0	1	0	0	30
Columbia	1	0	1	0	0	0	0	0	1	2	23
Greenville	1	1	0	0	0	0	0	0	0	0	3
Georgia:											
Atlanta	3	4	1	6	0	3	1	0	0	5	62
Brunswick	0	0	0	0	0	0	0	0	0	0	3
Savannah	1	1	0	0	0	4	1	1	0	1	24
Florida:											
St. Petersburg	1	0	1	0	0	0	0	0	0	0	16
Tampa	0	0	0	0	0	3	1	3	0	0	26
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	5	0	0	0	1	1	0	0	0	23
Louisville	5	9	1	2	0	16	1	2	0	4	107
Tennessee:											
Memphis	2	7	1	5	0	5	0	0	2	4	123
Nashville	2	5	0	0	0	2	0	0	0	0	49
Alabama:											
Birmingham	3	11	0	104	0	4	1	2	0	0	69
Mobile	0	1	0	1	0	1	0	0	0	0	21
Montgomery	0	0	1	2	0	0	0	0	0	0	15

City reports for week ended January 31, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	14	0	2			0	0		0	
Little Rock	1	1	0	1	0	2	0	0	0	1	
Louisiana											
New Orleans	3	18	3	0	0	19	2	12	1	7	161
Shreveport		0		0	0	1		0	0	1	35
Oklahoma											
Oklahoma	2	0	3	0	0	1	0	2	0	0	23
Tulsa	1	4	1	2			0	0			
Texas:											
Dallas	3	1	1	2	0	4	0	0	0	8	50
Galveston	0	0	0	1	0	1	0	1	0	0	16
Houston	1	10	0	7	0	4	0	0	0	0	58
San Antonio	1	0	0	0	0	3	1	0	1	0	
MOUNTAIN											
Montana:											
Billings	1	7	0	0	0	1	0	0	0	20	7
Great Falls	1	3	2	1	0	0	0	0	0	0	7
Helena	1	0	0	0	0	0	0	0	0		1
Missoula	1	1	1	0	0	1	0	0	0		5
Idaho:											
Boise	1	1	0	0	0	0	0	0	0	0	6
Colorado:											
Denver	11	8	2	0	0	13	1	0	0	2	95
Pueblo	2	3	0	0	0	0	0	2	0	0	14
New Mexico:											
Albuquerque	1	0	0	0	0	4	0	0	0	0	9
Arizona:											
Phoenix		0		0	0	9		0	0	0	30
Utah:											
Salt Lake City	4	1	3	0	0	1	0	0	0	6	36
Nevada:											
Reno	0	3	0	4	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle	10	9	2	10			0	0		17	
Spokane	3	1	6	0			0	0		8	
Tacoma	3	3	2	2	0	1	1	1	0	4	32
Oregon:											
Portland	6	8	5	11	0	0	0	0	0	6	
California:											
Los Angeles	16	49	2	39	2	37	2	0	0	37	
Sacramento	2	6	1	3	0	2	1	0	0	0	21
San Francisco	17	10	1	7	1	10	1	0	0	9	153

City reports for week ended January 31, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, est. expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	2	1	1	1	0	0	0	0	0
Springfield	0	0	1	0	0	0	0	0	0
Connecticut:									
Hartford	0	0	1	0	0	0	0	0	0
New Haven	1	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
Buffalo	1	1	0	0	0	0	0	0	0
New York	14	1	10	5	0	0	1	1	1
Pennsylvania:									
Philadelphia	1	0	0	0	0	0	1	0	0
Pittsburgh	0	0	0	1	0	0	0	1	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	0	0	1	0	0	0	0	0	0
Cleveland	0	0	0	0	0	0	0	1	0
Columbus	0	0	1	0	0	0	0	0	0
Illinois:									
Chicago	0	0	3	0	0	0	1	0	0
Peoria	0	0	0	1	0	0	0	0	0
Michigan:									
Detroit	0	0	1	0	0	0	0	0	0
Wisconsin:									
Milwaukee	1	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
North Dakota:									
Fargo	1	1	0	0	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	1	0	0	0	1	1	0	0
District of Columbia:									
Washington	0	0	1	1	0	0	0	0	0
North Carolina:									
Winston-Salem	0	0	0	0	1	0	0	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Louisville	1	0	0	0	0	0	0	0	0
Tennessee:									
Memphis	0	1	0	0	0	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	0	0	0	0	1	1	0	0	0
Texas:									
Houston	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Colorado:									
Denver	0	0	0	1	0	0	0	0	0
Pueblo	1	0	0	0	0	0	0	0	0
Utah:									
Salt Lake City	2	2	0	0	0	0	0	0	0
Nevada:									
Reno	1	0	0	0	0	0	0	0	0
PACIFIC									
Oregon:									
Portland	0	0	0	0	0	0	0	1	0
California:									
Los Angeles	3	0	0	0	0	0	0	0	0
San Francisco	0	0	0	1	0	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended January 31, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000, 000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, November 23, 1924, to January 31, 1925—Annual rates per 100,000 population [1]

	Week ended—									
	Nov. 29	Dec 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31
DIPHTHERIA CASE RATES										
Total	175	[2] 190	[3] 193	[4] 197	150	[4] 155	160	[5] 172	[5] 163	[6] 167
New England	166	258	[3] 208	221	189	258	256	179	171	199
Middle Atlantic	144	170	175	187	149	140	181	188	175	[7] 160
East North Central	173	165	167	185	134	151	132	141	130	[8] 135
West North Central	307	309	265	299	168	176	143	255	199	251
South Atlantic	260	[9] 173	201	150	134	146	173	[5] 106	[5] 138	128
East South Central	120	[10] 98	97	149	51	91	120	91	80	97
West South Central	125	144	209	195	116	148	144	195	162	148
Mountain	162	172	315	248	209	191	239	153	239	134
Pacific	128	252	273	[4] 207	225	[4] 129	194	206	223	293
MEASLES CASE RATES										
Total	66	[2] 112	[4] 128	[4] 143	105	[4] 158	215	[5] 141	[5] 213	[6] 211
New England	147	164	[3] 282	194	278	380	395	440	497	484
Middle Atlantic	79	105	120	115	235	121	169	157	187	[7] 200
East North Central	85	199	207	317	138	294	417	127	379	[8] 373
West North Central	10	25	35	19	10	10	19	12	27	21
South Atlantic	14	[9] 22	39	24	35	53	83	[5] 43	[5] 38	37
East South Central	0	[10] 0	6	11	0	17	29	46	74	91
West South Central	9	0	0	19	14	9	5	23	14	14
Mountain	29	19	48	57	19	115	134	267	248	286
Pacific	52	136	125	[4] 37	70	[4] 83	194	160	55	17
SCARLET FEVER CASE RATES										
Total	232	[2] 270	[3] 312	[4] 314	244	[4] 297	369	[5] 355	[5] 370	[6] 362
New England	437	544	[3] 602	552	512	609	661	561	596	534
Middle Atlantic	197	197	260	268	225	286	324	294	326	[7] 317
East North Central	228	257	234	311	230	213	383	375	360	[8] 379
West North Central	508	616	626	601	468	527	757	755	804	779
South Atlantic	128	[9] 171	252	213	132	203	160	[5] 243	[5] 189	185
East South Central	57	[10] 162	109	240	126	172	229	183	183	217
West South Central	93	125	162	185	65	83	148	116	195	204
Mountain	143	296	162	239	191	162	382	534	305	258
Pacific	168	197	218	[4] 134	133	[4] 138	189	183	220	226

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Norfolk, Va., and Memphis, Tenn., not included in calculating the rate. Reports not received at time of going to press
[3] Worcester, Mass., not included.
[4] Los Angeles, Calif., not included.
[5] Wilmington, Del., not included.,
[6] Newark, N. J., and Racine, Wis., not included.
[7] Newark, N. J., not included.
[8] Racine, Wis., not included.
[9] Norfolk, Va., not included.
[10] Memphis, Tenn., not included.

Summary of weekly reports from cities, November 23, 1924, to January 31, 1925—Annual rates per 100,000 population—Continued

SMALLPOX CASE RATES

	Week ended—									
	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan 17	Jan. 24	Jan. 31
Total	38	[2] 58	[3] 43	[4] 42	41	[4] 40	57	[5] 58	[5] 70	[6] 68
New England	0	0	[3] 0	0	0	0	0	0	0	0
Middle Atlantic	5	5	1	2	2	3	3	10	6	[7] 9
East North Central	14	10	13	14	20	27	40	39	48	[8] 35
West North Central	236	417	255	209	205	129	220	193	180	195
South Atlantic	6	[9] 48	39	22	28	39	30	[5] 64	[5] 38	45
East South Central	74	[10] 204	177	314	183	372	395	217	675	652
West South Central	32	19	14	51	19	32	65	32	32	60
Mountain	10	19	19	29	48	48	29	57	95	48
Pacific	136	113	113	[4] 106	122	[4] 69	148	212	209	177

TYPHOID FEVER CASE RATES

	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan 17	Jan. 24	Jan. 31
Total	29	[2] 45	[3] 43	[4] 56	35	[4] 37	36	[5] 21	[5] 17	[6] 18
New England	22	30	[3] 16	30	17	25	15	25	20	7
Middle Atlantic	46	71	68	101	57	58	49	21	20	[7] 20
East North Central	7	22	32	33	24	28	23	23	11	[8] 10
West North Central	4	8	17	15	19	4	6	10	6	12
South Atlantic	30	[9] 56	35	30	37	41	55	[5] 21	[5] 11	37
East South Central	109	[10] 63	57	51	34	40	51	17	29	23
West South Central	37	60	51	56	28	37	70	70	42	60
Mountain	19	10	19	10	0	0	10	0	48	19
Pacific	17	29	17	[4] 14	15	[4] 5	26	6	15	3

INFLUENZA DEATH RATES

	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan 17	Jan. 24	Jan. 31
Total	10	[2] 12	[3] 17	[4] 16	15	19	21	[5] 22	[5] 22	[6] 23
New England	5	17	[3] 5	15	15	3	17	27	10	27
Middle Atlantic	8	11	22	17	14	21	20	18	20	[7] 15
East North Central	11	9	13	9	16	10	16	15	18	[8] 12
West North Central	7	4	4	9	7	9	13	2	20	15
South Atlantic	14	[9] 11	22	22	14	26	35	[5] 47	[5] 23	39
East South Central	29	[10] 28	23	23	51	63	46	46	63	74
West South Central	25	31	36	41	15	51	41	87	92	82
Mountain	19	29	29	48	10	38	19	29	10	38
Pacific	8	8	4	[4] 17	12	12	20	12	12	20

PNEUMONIA DEATH RATES

	Nov. 29	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan 17	Jan. 24	Jan. 31
Total	130	[2] 153	[3] 159	[4] 172	157	203	192	[5] 215	[5] 211	[6] 207
New England	144	127	[3] 109	134	114	174	122	157	216	241
Middle Atlantic	152	188	201	191	178	226	228	260	234	[7] 237
East North Central	93	115	125	146	126	165	152	152	142	[8] 145
West North Central	74	63	88	68	92	101	90	107	120	118
South Atlantic	169	[9] 191	175	248	205	250	246	[5] 294	[5] 275	252
East South Central	246	[10] 211	217	297	206	303	292	189	320	303
West South Central	107	163	178	163	229	341	260	449	362	229
Mountain	124	210	200	276	219	229	229	248	324	315
Pacific	94	168	135	[4] 86	147	188	184	163	208	217

[2] Norfolk, Va., and Memphis, Tenn., not included in calculating the rate. Reports not received at time of going to press.
[3] Worcester, Mass., not included.
[4] Los Angeles, Calif., not included.
[5] Wilmington, Del., not included.
[6] Newark, N. J., and Racine, Wis., not included.
[7] Newark, N. J., not included.
[8] Racine, Wis., not included.
[9] Norfolk, Va., not included.
[10] Memphis, Tenn., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities eporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,584	1,023,012
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

PLAGUE ON VESSEL

Steamship at Majunga, Madagascar.—During the month of November, 1924, a fatal case of plague, European, was removed from a steamship arrived at Majunga, Madagascar, from Djibuti, a port on the Red Sea.

BOLIVIA

Smallpox—Typhus fever—La Paz—December, 1924.—During the month of December, 1924, 8 cases of smallpox with 4 deaths and 1 case of typhus fever were reported at La Paz, Bolivia. Population, 100,000.

CANADA

Communicable diseases—Ontario—December 28, 1924, to January 31, 1925.—During the period from December 28, 1924, to January 31, 1925, communicable diseases were reported in the Province of Ontario, Canada, as follows:

Disease	1924-1925		1923-1924	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis	7	5	1	1
Chancroid			11	
Chicken pox	810	1	971	
Diphtheria	347	34	318	25
German measles	38		21	
Goiter	77	1	2	1
Gonorrhea	124		142	
Influenza	67	33	20	6
Lethargic encephalitis	5	3	5	3
Measles	2,063		1,222	7
Mumps	1,257		627	
Pneumonia		250		218
Poliomyelitis	2			
Scarlet fever	700	14	870	13
Septic sore throat	8		14	1
Smallpox	27		50	
Syphilis	131		113	
Tetanus				2
Tuberculosis	212	112	172	89
Typhoid fever	53	9	38	5
Whooping cough	489	6	181	6

Smallpox.—Smallpox was reported in 13 localities, the largest number of cases being notified at Welland, viz, 6. Seven localities reported one case each.

CANARY ISLANDS

Plague—Vicinity of Santa Cruz de Teneriffe—January 3, 1925.—The occurrence of a case of plague in the vicinity of Santa Cruz de Teneriffe, Canary Islands, was reported January 3, 1925.

ECUADOR

Plague—Plague-infected rats—Guayaquil—December 16, 1924, to January 15, 1925.—During the period December 16 to 31, 1924, one case of plague was reported at Guayaquil, Ecuador, and 59 rats were found plague-infected out of 9,327 rates taken. During the period January 1 to 15, 1925, six cases of plague with four deaths were reported at Guayaquil and 28 rats found plague-infected out of 8,248 rats taken.

Mortality—Communicable diseases—Quito—December, 1924.—During the month of December, 1924, 149 deaths from all causes were reported at Quito, Ecuador, including dysentery, three deaths; malaria, one death; typhoid fever, one death; tuberculosis, nine deaths. There were 40 deaths of infants under one year of age. Population 100,398.

Typhoid fever prevalence—Quito.—Considerable increase of typhoid fever prevalence was reported at Quito under date of January 14, 1925. Part of the water supply of the city comes from an uncontaminated source and through closed pipes, but another part of the supply is through an open ditch, with consequent danger of pollution. The existence of unsanitary conditions among a considerable number of the population, absence of public and private latrines, and prevalence of flies were reported.

Plague—Chimborazo Province.—According to El Commercio, Quito, plague was reported present in Chimborazo Province, Ecuador, with 14 deaths to January 14, 1925. The occurrence was in two localities in Alausi District, and on the line of the Guayaquil and Quito railway at points not much above the coastal lowlands of Ecuador. It was stated that every effort was being made to prevent spread of the disease.

FINLAND

Communicable diseases—December 16–31, 1924.—During the period December 16 to 31, 1924, communicable diseases were reported in Finland as follows: Diphtheria, 70 cases; lethargic encephalitis, 5; poliomyelitis, 2; scarlet fever, 77; typhoid fever, 20; with 31 cases of paratyphoid fever. Population, 3,435,249.

HAWAII

Plague-infected rat—Honokaa.—A plague-infected rat was reported trapped, January 15, 1925, in the vicinity of the Pacific Sugar Mill Co.'s location at Honokaa, Hawaii.

ITALY

Kala-azar—Leprosy—Catania Province.—During the week ended December 28, 1924, 1 case of kala-azar and 1 case of leprosy were reported in the Province of Catania, Italy.

MADAGASCAR

Plague—November, 1924.—During the month of November, 1924, 182 cases of plague with 157 deaths were reported in the island of Madagascar, the occurrence being mainly distributed in the Provinces of Itasy, Moramanga, and Tananarive. The occurrence at ports was reported as follows: Fort Dauphin at the southern end of the island, 5 cases with 2 deaths; Majunga—1 fatal case, European, from steamship from Djibuti, Red Sea; and 1 case with 1 death at Tamatave. At the interior town of Tananarive, capital of the island, 6 cases with 5 deaths were reported.

MALTA

Communicable diseases—December, 1924—January 1-15, 1925.—Communicable diseases have been reported in the island of Malta as follows: December, 1924—Lethargic encephalitis, 2 cases; Malta (undulant) fever, 43 cases; typhoid fever, 24 cases with 3 deaths. January 1-15, 1925—Chicken pox, 1 case; lethargic encephalitis, 1 case; Malta (undulant) fever, 20 cases; typhoid fever, 6 cases.

MEXICO

Smallpox—Durango—January, 1925.—During the month of January, 1925, smallpox was reported present in Durango, State of Durango, Mexico, with 1 fatal case occurring in the city and 4 fatal cases at ranches in the vicinity. The deaths were stated to be of unvaccinated children. Vaccination of all persons not vaccinated was stated to have been ordered.

Epidemic smallpox—Vera Cruz—October-December, 1924.—Smallpox was reported at Vera Cruz, Mexico, in epidemic form, early in October, 1924. To the end of December, 1924, 68 cases with 31 deaths were reported. At the close of the year Federal authorities in cooperation with the local board of health instituted an investigation of sanitary conditions in Vera Cruz and measures were taken to vaccinate the entire population. It was decided to establish a section of the Federal board of health at Vera Cruz.

RUSSIA

Epidemic malaria—Ossetia, Russia.—Under date of January 3. 1925, malaria in grave epidemic form was stated to be present in 13 villages recently established near Ossetia, in the Caucasus, Russia. All the inhabitants of 12 villages were stated to be affected with the

disease, and in one village—Nogir—the number of persons affected was stated to be 90 per cent of the population.

UNION OF SOUTH AFRICA

Plague—December 14-27, 1924.—Plague has been reported in the Union of South Africa as follows: Week ended December 20, 1924—2 fatal cases occurring on farms, 1 in the Vredefort District, Orange Free State, native, bubonic, in locality in which a fatal case occurred in the preceding week; 1 fatal case, native, bubonic, on a farm in the Transvaal; previous fatal case reported. Week ended December 27, 1924—Cape Province, Kimberley District, on farm 4 miles southwest of Kimberley, 2 cases, 1 death, native, bubonic; Orange Free State, Bloemfontein District, on farm 30 miles southwest from Bloemfontein, 1 fatal case, native, bubonic; Brandfort Area, Bloemfontein District, on farm, 2 cases (white) bubonic; Philippolis District, on farm, 1 case, native, bubonic. A suspect case (white) was reported in Boshof District, Transvaal, on farm

Spread of infection among wild rodents.—Under date of December 29, 1924, considerable extension of plague infection among wild rodents was reported in the eastern part of the Orange Free State, with increased danger of spread to the eastern Transvaal.

Smallpox—Typhus fever—November, 1924.—During the month of November, 1924, seven cases of smallpox, of which one case was in a European, and 233 cases of typhus fever with 66 deaths, occurring in the native or colored population, were reported in the Union of South Africa. For distribution of typhus fever occurrence according to States, see page 395.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended February 20, 1925[1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon	Nov. 2-29	2	2	
India:				
Madras	Dec. 21-27	10	6	
Do	Dec. 28-Jan. 10	40	22	
Rangoon	Dec. 7-20	4		

PLAGUE

Place	Date	Cases	Deaths	Remarks
Canary Islands:				
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.
Ceylon:				
Colombo	Dec. 21-27	2		

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received During Week Ended February 20, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Ecuador:				
Chimborazo Province—				
Alausi District	Jan. 14		14	At two localities on Guayaquil and Quito Railway.
Guayaquil	Dec. 16-31	1		Rats taken, 9,327; rats found plague infected, 59.
Do	Jan. 1-15	6	4	Rats taken, 8,218; rats found plague infected, 28.
Gold Coast	Oct. 1-31	4	4	
Hawaii:				
Honokaa				Jan. 15, 1925: One plague rat trapped Vicinity of Pacific Sugar Mill Co.'s location.
India:				
Karachi	Jan. 4-10	1	1	
Rangoon	Dec 7-27	8	7	
Japan	Aug. 10-Nov 15	12		
Java:				
East Java—				
Soerabaya Residency	Nov. 23-Dec. 13	47	51	
West Java—				
Cheribon	Nov 18-24		13	
Pekalongan	do		13	
Tegal	do		7	
Madagascar				Nov 1-30, 1924: Cases, 182; deaths, 157 Bubonic, pneumonic, septicemic.
Province—				
Itasy	Nov 1-30	3	1	Bubonic.
Moramanga	do	34	25	Bubonic, pneumonic, septicemic.
Tananarive	do	138	127	Bubonic, pneumonic, septicemic. At town of Tananarive, interior, cases, 6, deaths, 5.
Towns (ports)—				
Fort Dauphin	do	5	2	
Majunga	do	1	1	European, on steamship from Djibuti, Red Sea.
Tamatave	do	1	1	
Nigeria	Aug. 1-Oct. 31	309	256	
Union of South Africa:				
Cape Province—				
Kimberley District	Dec. 21-27	2	1	Native; bubonic; occurring on farm 4 miles from Kimberley.
Orange Free State—				
Bloemfontein District	do	1	1	Native; bubonic, occurring on farm 30 miles from Bloemfontein.
Brandfort Area	do	2		White, bubonic, on farm.
Philippolis District	do	1		Native, bubonic, on farm.
Vredefort District	Dec. 14-20	1	1	Native; bubonic, on farm, vicinity of locality of fatal case previously reported
Transvaal—				
Boshof	do	1	1	Native; bubonic; on farm; fatal case previously reported. Suspect case reported, week ended Dec. 27, 1924.
On vessel:				
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Bolivia:				
La Paz	Dec. 1-31	8	4	
British South Africa:				
Northern Rhodesia	Dec. 9-15	2		
Canada:				
British Columbia—				
Vancouver	Jan. 18-31	55		
Manitoba—				
Winnipeg	Feb 1-7	2		

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received During Week Ended February 20, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Canada—Continued				
New Brunswick—				
Bonaventure and Gaspe Counties	Jan 1-31	1		
Ontario				Dec 28, 1924-Jan. 31, 1925: Cases, 27 In 13 localities.
Ceylon				July 27-Nov. 29, 1924: Cases, 27; deaths, 1.
China:				
Foochow	Dec. 21-27			Present.
Egypt:				
Alexandria	Dec. 24-31	1		
France				Nov., 1924: Cases, 8.
Great Britain:				
England and Wales				Jan. 11-17, 1925: Cases, 113.
Greece				Nov., 1924: Cases, 2; deaths, 1.
India:				
Bombay	Dec. 21-27	7	5	
Karachi	Dec. 28-Jan. 10	13	1	
Madras	Dec. 21-27	27	8	
Do	Dec. 28-Jan. 10	54	18	
Rangoon	Dec. 7-27	30	8	
Italy				Nov 9-Dec. 6, 1924: Cases, 4.
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Java:				
East Java—				
Residency—				
Soerabaya	Nov. 30-Dec. 13	109	23	
West Java—				
Residency—				
Cheribon	Nov. 18-24	1		
Pekalongan	do	2		
Preanger	do	1		
Mexico:				
Durango	Jan 1-31		5	Occurring in district and town; children.
Mexico City	Jan. 11-24	4		Including municipalities in Federal District.
Tampico	Jan. 21-31	6	1	
Vera Cruz	Jan. 19-25		3	Jan. 1-29, 1925: 34 cases unofficially reported.
Nigeria				Oct 1-31, 1924. Cases, 4; deaths, 1.
Poland				Sept. 21-Nov. 22, 1924: Cases, 14; deaths, 2.
Portugal:				
Lisbon	Dec. 21-27	6	1	
Do	Dec. 28-Jan. 17	37	7	
Oporto	Jan. 11-17	1		
Russia				July-Sept., 1924: Cases, 1,251.
Spain:				
Madrid	Dec. 1-31		10	
Malaga	Jan. 18-24		10	
Tunis:				
Tunis	Jan. 22-28	13	15	
Union of South Africa				Nov. 1-30, 1924: Cases, 7 (European, 1).
Transvaal	Dec. 14-20			Outbreaks.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Bolivia:				
La Paz	Dec. 1-31	1		
Bulgaria				Oct. 1-31, 1924: 1 case.
Chile:				
Talcahuano	Jan. 4-10		1	
Valparaiso	Jan. 11-17		2	
Gold Coast				Oct. 1-31, 1924: 1 case.
Greece				Nov. 1-30, 1924: 5 cases.
Japan				Aug. 1-Nov. 15, 1924: 2 cases.
Mexico:				
Mexico City	Jan. 11-24	16		
Poland				Oct. 27-Nov. 15, 1924: Cases, 95; deaths, 10.
Portugal:				
Lisbon	Dec. 29-Jan. 4		2	

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received During Week Ended February 20, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Rumania				Aug. 1-31, 1924: 20 cases, 2 deaths.
Russia				July-Sept., 1924: 5,225 cases.
Leningrad	Oct. 26-Nov. 22	1		
Tunis				Nov. 21-Dec. 20, 1924: 1 case.
Union of South Africa				Nov. 1-30, 1924: Cases, 233; deaths, 66. Colored population
Cape Province				Nov. 1-30, 1924: Cases, 89; deaths, 16.
Do	Dec. 21-27			Outbreaks.
Natal				Nov 1-30, 1924. Cases, 105; deaths, 45.
Do	Dec. 14-20			Outbreaks.
Orange Free State				Nov. 1-30, 1924: Cases, 21; deaths, 2.
Transvaal				Nov. 1-30, 1924: Cases, 18; deaths, 3.

Reports Received from December 27, 1924, to February 13, 1925[1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Nov. 1, 1924: Cases, 7; deaths, 6.
Colombo	Nov. 16-22	1		
India				Oct. 19-Dec 6, 1924: Cases, 17,830; deaths, 10,750
Bombay	Nov. 23-Dec. 20	4	4	
Calcutta	Oct 26-Dec 26	54	46	
Madras	Nov. 16-Dec 20	50	30	
Rangoon	Nov. 9-29	5	2	
Indo-China				Aug 1-Sept 30, 1924. Cases, 14; deaths, 10.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov. 30-Dec. 6	1		
Siam:				
Bangkok	Nov. 9-29	4	2	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St Michael Island	Nov. 2-Jan. 3	30	13	
British East Africa				
Kenya-Uganda	Aug. 1-31	79	62	
Canary Islands.				
Las Palmas				Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec. 26	3	1	Vicinity of Santa Cruz de Teneriffe
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-Dec. 20	9	8	
China:				
Nanking	Nov. 23-Jan. 3			Present.
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	8	8	Rats taken, 17,677; found infected, 33.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to February 13, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Egypt				Dec. 25-31, 1924: Cases, 5. Jan. 1-Dec. 31, 1924: Cases, 373. Corresponding period, 1923: Cases, 1,519. Jan. 1-8, 1925: Cases, 11; deaths, 4.
Do	Jan. 1, 1924-Jan. 1, 1925.	377	194	
City—				
Alexandria	do	2	2	First case, Apr. 2; last case, Nov. 26.
Ismailia	do	1	1	July 6-July 6.
Port Said	do	6	4	Apr. 24-Dec. 7.
Suez	do	20	13	Jan. 2-Dec. 20.
Province—				
Assiout	do	44	35	Apr. 1-Aug. 27.
Behera	do	1	1	Aug. 9
Beni-Souef	do	4	4	June 21-Dec. 25.
Charkieh	do	1	1	Jan. 31.
Dakhalia	do	1	1	Oct. 1.
Do	Jan. 1-8, 1925	1	1	
Fayoum	Jan. 1, 1924-Jan. 1, 1925.	106	33	Feb 18-July 18.
Gharbia	do	6	2	Apr. 21-Sept. 2.
Ghirga	do	10	3	Jan. 17-May 13.
Kalioubiah	do	14	4	Jan. 6-Dec. 31.
Do	Jan. 1-8, 1925	3		
Kena	Jan. 1, 1924-Jan. 1, 1925	45	26	Apr. 9-Nov. 15.
Menoufieh	do	58	36	Jan. 2-June 28.
Do	Jan. 1-8, 1925	7	3	
Minia	Jan. 1, 1924-Jan. 1, 1925.	58	28	Feb. 5-Aug. 1.
Gold Coast				Sept, 1924: Cases, 37; deaths, 38.
Hawaii.				
Honokaa	Nov. 4	1		At Mill Camp, location of Honokaa Sugar Co. Plague-infected rodent found, Dec. 9, 1924, in vicinity of Honokaa village.
India				Oct 19-Dec. 6, 1924: Cases, 17,096, deaths, 12,897.
Bombay	Nov. 22-Dec. 20	3	2	
Karachi	Nov. 30-Dec. 6	2	1	
Madras Presidency	Nov. 23-Dec. 6	182	128	
Do	Dec 14-20	161	113	
Rangoon	Oct. 26-Dec. 6	13	13	
Indo-China				Aug 1-Sept. 30, 1924: Cases, 25; deaths, 20.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri; epidemic.
Pare	Nov. 29			Do.
Soerabaya	Nov. 16-22	6	4	
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Pekalongan	do		29	
Tegal	Oct 14-20		3	
Madagascar:				
Tananarive Province				Oct. 16-Nov. 15, 1924: Cases, 83; deaths, 75.
Tananarive Town	Oct. 16-Nov. 15	6	5	
Other localities	do	77	70	Bubonic, pneumonic, septicemic.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Union of South Africa:				
Cape Province—				
De Aar	Nov. 22-29	1		Native.
Dronfield	Dec. 7-13	1		8 miles from Kimberley.
Kimberley	do	1	1	
Maraisburg District	Nov. 22-Dec. 13	4	2	Bubonic, on Goedshoop Farm.
Orange Free State—				
Hoopstad	Dec. 7-13	1		On farm.
Kroonstad	Nov. 22-29	1		Bubonic; mild; from Grandstable Farm, Hoopstad district.
Vredefort	Dec. 7-13	1	1	On farm.

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to February 13, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa—Con.				
Transvaal—				
Boshof	Dec. 7-13	1	1	On farm.
Wolmaransstad district	Nov. 22-29	1	1	On Farm Wolverspruit, Vaal River. Native
On vessel:				
S. S. Conde				At Marseille, France, Nov. 6, 1924 Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Bolivia				
La Paz	Nov. 1-30	12	7	
Brazil:				
Pernambuco	Nov. 9-Dec. 20	73	10	
British South Africa				
Northern Rhodesia	Oct. 28-Dec. 8	55	2	
Canada:				
British Columbia—				
Vancouver	Dec 14-Jan 3	32		
Do	Jan. 4-17	35		
Victoria	Jan. 18-24	1		
Manitoba—				
Winnipeg	Dec 7-Jan 3	14		
Do	Jan 4-24	21		
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33.
Hamilton	Jan 24-30	1		
China:				
Amoy	Nov. 9-Jan. 3			Present.
Antung	Nov. 17-Dec. 28	5		
Foochow	Nov. 2-Dec. 13			Do.
Hongkong	Nov. 9-Dec. 6	5	1	
Shanghai	Dec. 7-27	1	2	
Czechoslovakia				Apr. June, 1924. Case, 1, occurring in Province of Moravia.
Ecuador.				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 23	9		
France				July-Oct, 1924 Cases, 61
Germany				June 29-Nov. 8, 1924. Cases, 7.
Gibraltar	Dec 8-14	1		
Gold Coast				July-Sept., 1924: Cases, 82; deaths, 1.
Great Britain:				
England and Wales	Nov 23-Jan. 3	472		
Do	Jan 4-10	91		
Greece				Jan-June, 1924: Cases, 170; deaths, 27.
Do				July-Oct, 1924: Cases, 34; deaths, 25
India				Oct 19-Dec. 6, 1924: Cases, 6,422; deaths, 1,433.
Bombay	Nov 2-Dec 20	19	12	
Calcutta	Oct. 26-Dec 20	194	106	
Karachi	Nov. 16-Dec. 27	12	2	
Madras	Nov. 16-Dec 20	69	30	
Rangoon	Oct. 26-Dec. 6	41	12	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 223; deaths, 76.
Province—				
Anam	Aug. 1-Sept 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov 16-29	3	2	Including 100 sq. km. of surrounding country.
Tonkin	Aug. 1-Sept. 30	19	7	
Iraq:				
Bagdad	Nov. 9-15	1	1	
Italy				June 29-Nov. 8, 1924: Cases, 57.
Jamaica				Nov. 30-Dec. 27, 1924. Cases, 33. Reported as alastrim
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to February 13, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Java:				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in two native villages.
Soerabaya	Oct. 19-Nov. 29	484	159	
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct 21-Nov. 14	2		
Do	Dec. 20-26	10	1	
Cheribon	Oct. 14-Nov. 3	14		
Pekalongan	Oct. 14-Nov. 3	20		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5.
Mexico:				
Durango	Dec. 1-31		5	
Guadalajara	Dec. 23-29		1	
Do	Jan. 6-12		1	
Mexico City	Nov. 23-Dec. 27	5		
Monterey				Jan. 24, 1925: Outbreak.
Salina Cruz	Dec. 1-31	1	1	
Tampico	Dec 11-31	5	4	
Do	Jan 1-20	11	5	
Vera Cruz	Dec 1-Jan 3		10	
Do	Jan. 5-18		9	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Nigeria				Jan -June, 1924: Cases, 357; deaths, 87.
Do				July-September, 1924: Cases 6; deaths, 1.
Peru:				
Arequipa	Nov 24-30		1	
Portugal.				
Lisbon	Dec. 7-20	19		
Oporto	Nov 30-Dec. 27	3	2	
Russia				Jan. 1-June 30, 1924: Cases, 9,683.
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Cadiz	Nov. 1-Dec. 31		51	
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-17		26	
Valencia	Nov. 30-Dec. 6	2		
Switzerland:				
Lucerne	Nov. 1-Dec 31	19		
Syria:				
Aleppo	Nov. 23-Dec. 27	13		
Do	Jan. 4-10	12	3	
Tunis:				
Tunis	Nov. 25-Dec. 29	42	35	
Do	Jan 1-14	23	29	
Turkey:				
Constantinople	Dec. 13-19	5		
Union of South Africa:				
Cape Province	Nov. 9-29			Outbreaks.
Orange Free State	Nov. 2-8			Do.
Transvaal	Nov. 9-15			Do.
Uruguay				Jan.-June, 1924: Cases, 101; deaths, 2.
Do				July, 1924: Cases, 25; deaths, 3.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Nov. 1-Dec. 31	5	1	
Bolivia:				
La Paz	do	2		
Bulgaria				Jan.-June, 1924: Cases, 191; deaths, 28.
Do				July-Aug., 1924: Cases, 4.
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Iquique	Nov. 30-Dec. 1		2	
Talcahuano	Nov 16-Dec. 20		5	
Valparaiso	Nov. 25-Dec. 7		4	

CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued

Reports Received from December 27, 1924, to February 13, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Chosen:				
Seoul	Nov. 1-30	1	1	
Czechoslovakia				Apr.-June, 1924: Cases 3, occurring in Province of Russinia
Egypt:				
Alexandria	Dec. 3-9	1	1	
Cairo	Oct. 1-Nov. 18	10	7	
France				July-Oct., 1924: Cases, 7.
Greece				May-June, 1924: Cases, 116; deaths, 8.
Do				July-Oct., 1924. Cases, 30; deaths, 4.
Latvia				Oct.-Nov., 1924: Cases, 16.
Lithuania				Aug.-Oct, 1924: Cases, 15; deaths, 1.
Mexico:				
Durango	Dec. 1-31		1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal district.
Palestine				Nov. 12-Dec. 8, 1924: Cases, 7.
Ekron	Dec. 23-29	1		
Jerusalem	do	2		
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept. 28-Nov. 1, 1924: Cases, 137; deaths, 7.
Portugal:				
Oporto	Jan. 4-10	1		
Rumania				Jan.-June, 1924: Cases, 2,906; deaths, 328.
Do				July, 1924. Cases, 69; deaths, 10.
Constanza	Dec. 1-10	1		
Russia				Jan. 1-June, 30, 1924: Cases, 92,000.
Leningrad	June 29-Oct. 25	11		
Spain				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Tunis				July 1-Nov. 20, 1924: Cases, 39.
Turkey:				
Constantinople	Nov. 15-Dec. 19	6	1	
Do	Jan. 2-8	1		
Union of South Africa.				
Cape Province	Nov. 9-29			Outbreaks.
East London	Nov. 16 22	1		
Orange Free State	Nov. 9-Dec. 13			Do.
Transvaal	Nov. 9-15			Do.
Yugoslavia				Aug. 3-Oct. 18, 1924: Cases, 17; deaths, 2.
Belgrade	Nov. 24-Dec. 7	4		

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SURY DEPARTMENT

PUBLIC HEALTH REPORTS

ISSUED WEEKLY

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SPECIAL ARTICLES

Sickness Incidence Among a Group of School Children

Death Rates in a Large Group of Insured Persons, 1924

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UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

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PUBLIC HEALTH REPORTS

VOL. 40 FEBRUARY 27, 1925 No. 9

INCIDENCE OF SICKNESS AMONG WHITE SCHOOL CHILDREN IN HAGERSTOWN, MD.

Frequency of illnesses during the school year 1923-24 and a summary of the experience for 1921-1924 [1]

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A preceding report [2] on sickness among school children at Hagerstown, Md., was based on observations extending over the period December, 1921, to May, 1923, inclusive, for the school months only. The collection of morbidity data was continued, however, during the school term 1923-24. A total of 5,021 white school children were under observation for a part or for the whole of the 1923-24 school term, with 4,859 full-time school years of exposure.[3] A large majority

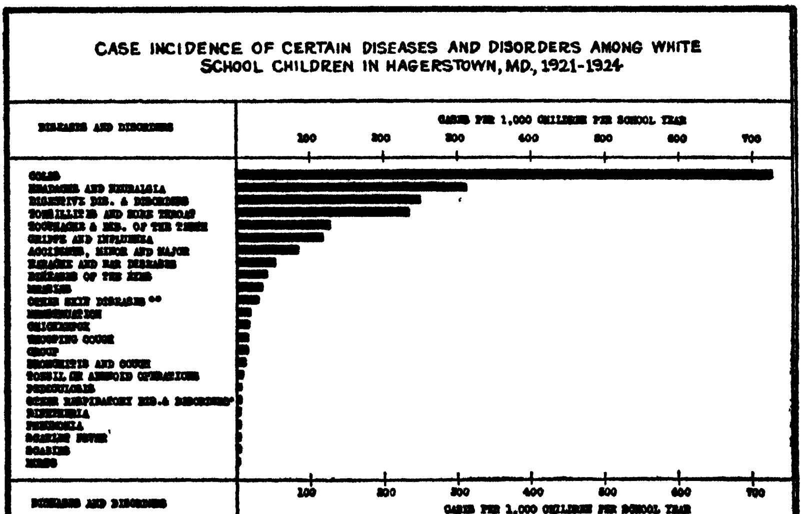


FIG. 1

[1] From Field Investigations in Child Hygiene, Senior Surgeon Taliaferro Clark in Charge, in cooperation with the Statistical Office, Statistician Edgar Sydenstricker in charge, United States Public Health Service. The data on morbidity of school children in Hagerstown, Md., were collected under the supervision of Surgeon C. V. Akin, United States Public Health Service, in cooperation with the Hagerstown public school authorities and the Washington County Health Demonstration.

[2] Morbidity among School Children in Hagerstown, Md.—Cases of Illness and Days Lost from School on Account of Illness among White School Children during the School Months, December, 1921, to May, 1923, Inclusive. Public Health Reports, Vol. 39, No. 38, Sept. 19, 1924, pp. 2391-2422 (Reprint 957).

[3] The days the children were under observation were summated to secure the total days of exposure. This figure was divided by 180 to get the number of full-time school years of exposure. This assumed a school year of 9 months with 20 school days in each school month. If every child were enrolled the whole term, the number of children and the number of full-time years of exposure would be the same.

of these children were under observation for the whole period of nine months. The number under observation for a part or for all of the 1922–23 school year was slightly greater—5,126 children. The reduction in the number for the year 1923–24 was due chiefly to discontinuing observations on children attending the boys' high school. Therefore, the age and sex distribution of those under observation during 1923–24 is somewhat different from that for the year 1922–23, because relatively more younger boys are included in the present study.

CAUSES OF ILLNESS

The case rates per 1,000 children per school year are shown in Table 1 for nearly three school terms, that is, from December, 1921, to May, 1924, and also for each of the school terms separately. The relative frequency of the different diseases and disorders as causes of absence from school are shown graphically in Figure 1 for the whole three-year period.

TABLE 1.—*Morbidity from certain causes among white school children of both sexes and all ages in the three school years 1921–22, 1922–23, and 1923–24, in Hagerstown, Md.*

Diagnosis	Cases per 1,000 children per school year of 180 school days				Number of cases of sickness			
	Total 1921–24	1923–24	1922–23	1921–22	Total 1921–24	1923–24	1922–23	1921–22
All causes	2,367	2,420	2,438	2,114	29,604	11,757	12,611	5,236
Measles	33	2	48	64	413	9	246	158
Mumps	1	0	1	1	11	2	7	2
Whooping cough	14	14	0	42	175	70	2	103
Chicken pox	15	17	14	11	185	83	74	28
Scarlet fever	4	3	5	2	46	15	26	5
Diphtheria	4	5	5	2	56	26	25	5
Croup	14	9	16	17	173	45	85	43
Colds	727	701	743	746	9,096	3,405	3,843	1,848
Grippe and influenza	116	46	189	100	1,449	223	978	248
Tonsillitis and sore throat	232	238	221	242	2,899	1,156	1,144	599
Bronchitis and cough	10	9	9	16	130	42	49	39
Pneumonia	4	3	4	8	55	14	22	19
Other respiratory diseases and disorders	5	5	6	3	62	24	30	8
Digestive diseases and disorders	247	265	244	219	3,092	1,288	1,262	542
Toothache and diseases of the teeth	125	139	129	88	1,561	675	667	219
Earache and ear diseases	51	54	53	44	641	260	273	108
Diseases of the eyes	38	32	35	56	481	155	182	144
Headache and neuralgia	310	334	324	234	3,877	1,621	1,677	579
Scabies	4	4	2	7	45	20	8	17
Pediculosis	5	6	4	8	66	27	20	19
Other skin diseases	27	27	33	15	340	132	170	38
Accidents, minor and major	81	91	89	45	1,014	442	461	111
Tonsil or adenoid operations	7	6	7	12	90	27	34	29
Menstruation	16	15	17	16	203	74	89	40
Other diseases and disorders	73	78	79	67	909	361	362	166
Unknown	203	317	169	48	2,535	1,541	875	119
					Total, 1921–24	1923–24	1922–23	1921–22
Number of individual children						5,021	5,126	3,712
Number of days of exposure					2,251,515	874,606	931,042	446,[illegible]
Full-time school years of exposure					12,508.42	4,858.92	5,172.46	2,477.04

The case rates for different diseases and disorders are fairly constant for the three years. The common cold stands out prominently as the most frequent cause of illness among school children, with

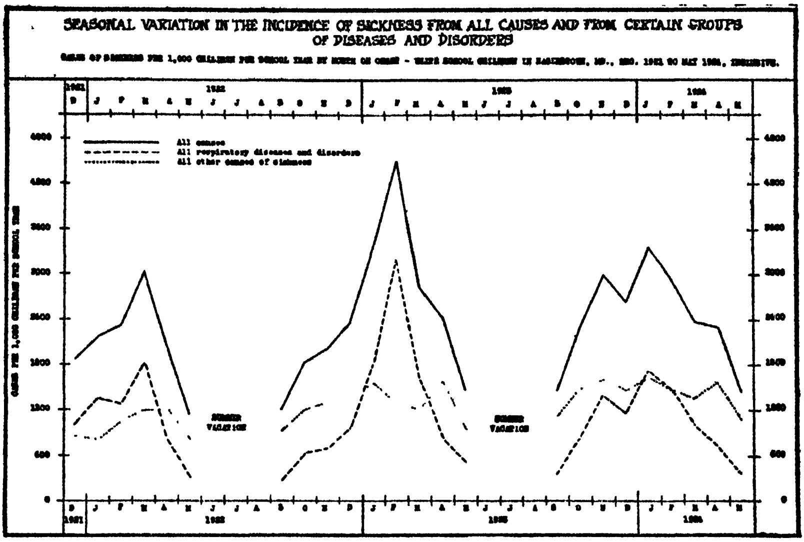


FIG. 2

headache second, and the digestive disorders (upset stomach, etc.) third. However, the rate for the common cold is from two to three times as great as that for either of these causes. The rate for ton-

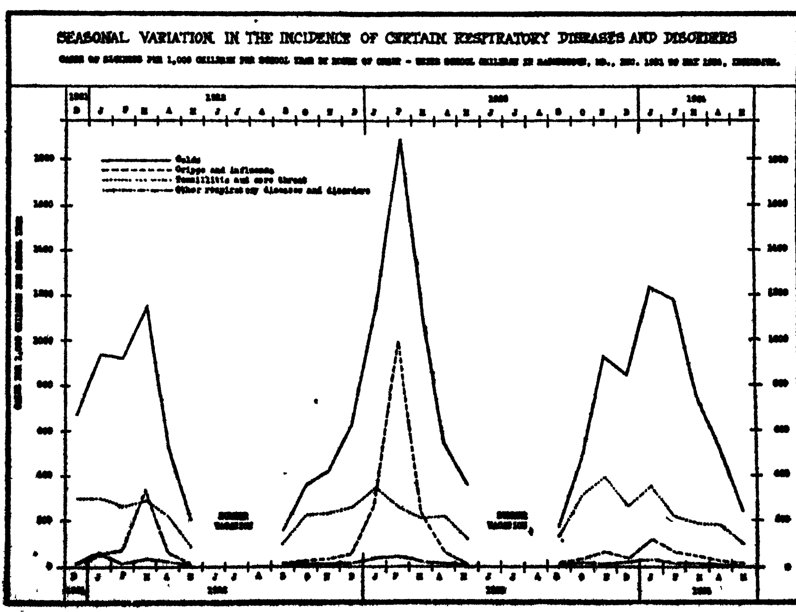


FIG. 3

-sillitis and sore throat is almost as large as that for the digestive disorders. The respiratory illnesses constituted 46 per cent of all the cases of sickness reported during the three-year period.[4]

SEASONAL VARIATION IN ILLNESS

The case rates for certain diseases are shown by months in Table 2 for the school year 1923–24. Similarly, the monthly rates for the school years 1921–22 and 1922–23 are shown in Table 7 of the preceding report mentioned above. The monthly incidence rates for some of the diseases for the entire school period, December, 1921, to May, 1924, are shown graphically in Figures 2 and 3.

TABLE 2.—*Seasonal variation in the morbidity from certain diseases and disorders; case rates and the number of cases of sickness among white school children in Hagerstown, Md., September, 1923, to May, 1924, inclusive*

Diagnosis	1923				1924				
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May [a]
CASES OF SICKNESS PER 1,000 CHILDREN PER SCHOOL YEAR OF 180 SCHOOL DAYS									
All causes	1,465	2,318	3,007	2,649	3,387	2,958	2,390	2,312	1,441
All respiratory diseases and disorders	335	840	1,401	1,174	1,738	1,486	1,015	741	360
All other causes	1,129	1,478	1,606	1,475	1,649	1,472	1,375	1,572	1,081
Measles								10	6
Whooping cough	2	15	31	35	30	13	5	2	3
Chicken pox		6	16	37	32	20	18	15	14
Scarlet fever		4	4	5	3			10	3
Diphtheria	4	7	10	5	18	2	2		
Croup	2	9	17	20	8	13	7	4	6
Colds	183	474	925	846	1,232	1,181	754	521	245
Grippe and influenza	14	31	64	39	119	63	47	21	11
Tonsillitis and sore throat	131	316	398	264	353	224	196	187	101
Other respiratory diseases and disorders	8	18	14	25	34	18	18	12	5
Digestive diseases and disorders	287	313	313	220	274	249	263	293	186
Headache and neuralgia	244	350	408	340	345	336	342	413	248
All other diagnoses	591	775	808	814	938	840	738	825	615
NUMBER OF CASES OF SICKNESS									
All causes	751	1,253	1,548	1,074	2,015	1,638	1,319	1,199	960
All respiratory diseases and disorders	172	454	721	476	1,034	823	560	384	240
All other causes	579	799	827	598	981	815	759	815	720
Measles								5	4
Whooping cough	1	8	16	14	18	7	3	1	2
Chicken pox		3	8	15	19	11	10	8	9
Scarlet fever		2	2	2	2			5	2

[a] Including a few days of June.

[4] It must be noted that some of the diseases which are near the bottom of the list in order of frequency (Fig. 1) are more important when considered from the viewpoint of days lost from school. The present analysis, however, is confined to cases of illness and does not take into consideration the duration.

TABLE 2.—*Seasonal variation in the morbidity from certain diseases and disorders; case rates and the number of cases of sickness among white school children in Hagerstown, Md., September, 1923, to May, 1924, inclusive*—Continued

Diagnosis	1923				1924				
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Number of children	4,858	4,865	4,877	4,865	4,868	4,747	4,730	4,667	4,612
School days in month	19	20	19	15	22	21	21	20	26
Total possible days of attendance	92,302	97,300	92,663	72,975	107,096	99,687	99,330	93,340	119,912
Full-time years of exposure	512.79	540.56	514.79	405.42	594.98	553.82	551.83	518.56	666.18

In Figure 2 are shown the incidence rates for all causes of sickness and for two large groups—the respiratory diseases and all other causes of sickness. The incidence rates for the nonrespiratory diseases and disorders are very similar for each of the three years considered, but the rates for the respiratory diseases are considerably less for the periods 1923–24 and 1921–22 than in the year 1922–23. The highest incidence of the respiratory diseases occurred in March in the year 1922, in February for the year 1923, and in January for 1924.

The incidence of certain of the respiratory diseases during this period is shown on an enlarged scale in Figure 3.

There were relatively few cases of either "la grippe" or influenza reported during the school year 1923–24, but there was a very definite peak for these diseases in March, 1922, and a larger peak in February, 1923. The rates for common cold were particularly high for the months during which influenza was prevalent. The rather high rate for this disorder in the fall of 1923, with a somewhat lower rate in December of the same year, is in agreement with the findings of the United States Public Health Service based on an investigation of the occurrence of respiratory diseases among college students during the same period.[5] The incidence of tonsillitis and sore throat was very similar for each of the school years.

COMPARISON OF MORBIDITY RATES BASED ON WEEKLY REPORTS FROM THE SCHOOLS WITH RATES BASED ON BIMONTHLY CANVASS OF THE HOMES

In order to evaluate different methods of procuring morbidity reports, advantage was taken of a survey of the incidence of sickness in the general population which was being made at Hagerstown, Md., by the Statistical Office of the United States Public Health Service

[5] Epidemiological Study of the Minor Respiratory Diseases by the Public Health Service. By J. G. Townsend. Public Health Reports, vol. 39, No. 43, Oct. 24, 1924 (Reprint 966).

at the same time that morbidity reports were being collected in the public schools. During the course of this survey a group of families comprising nearly one-third of the total population of the city were visited at intervals of approximately two months by field assistants to ascertain the cases and causes of sickness which had occurred in the homes since the date of the preceding visit. The data relating to this survey have been partially tabulated and issued as a preliminary report.[6] A tabulation of the data for the period December, 1921–December, 1922, by age and school attendance showed that a total of 1,643 children from 5 to 21 years of age who were attending school were included in the population group under observation by field assistants. The sickness rate in this group was compared with that of approximately 5,000 children under observation in the school during a part or the whole of the same period. The data for June, July, and August were eliminated from the canvass reports in order that the material studied for the two groups should cover the same months.

In Table 3 are shown the incidence rates from all causes, based on data collected by field assistants in the homes and on reports from the schools. The rates are shown for cases according to duration in days lost from school.

TABLE 3.—*Cases of sickness of different durations from all causes as reported in bimonthly canvasses of a group of families and as reported weekly by school teachers—1,643 school children canvassed and about 5,000 children reported on by teachers in Hagerstown, Md., December, 1921, to May, 1922, and September to December, 1922*[1]

Days lost from school	Cases per 1,000 children per school year of 9 months		Ratio of rate based on school reports to rate based on canvass reports[2]
	Reported in bimonthly canvasses	Reported weekly by school teachers	
All cases	931	1,989	214
1 day or longer	877	1,730	197
2 days or longer	747	1,033	138
3 days or longer	646	647	100
4 days or longer	501	451	90
5 days or longer	380	346	91
6 days or longer	260	232	89
1 day or less	184	956	520
2 days	101	386	382
3 days	145	196	135
4 days	121	105	87
5 days	120	115	96

[1] Full-time school years of exposure: Canvass, 1,643.11; School, 4,532.33.
[2] Base 100=rate for the given duration from canvass reports.

Considering cases of sickness, regardless of their duration, the rates based on the school reports are more than double the rates based on

[6] The Incidence of Illness in a General Population Group—General Results of a Morbidity Study from Dec. 1, 1921, through Mar. 31, 1924, in Hagerstown, Md. By Edgar Sydenstricker. Public Health Reports, vol. 40, No. 7, Feb. 13, 1925 (Reprint 989).

reports obtained by the canvasses. Although the two groups are not identical, the canvassed group is probably a representative sample of the total school population, and for this reason no very great variation would be expected in the actual sickness occurring in the two groups. The difference noted in the rates, therefore, probably lies largely in the reported rather than in the actual frequency of illness. The mothers, particularly those with large families, can hardly be expected to remember over a period of two months all cases of sickness of only one or two days' duration, particularly the minor complaints. The teacher's reports, on the other hand, were made every week. In some instances the child may have reported sickness when the ailment was of such minor importance as to be almost negligible. In other instances sickness may have been assigned as a cause of absence in a deliberate attempt to offer a plausible excuse for an absence from school when it was not due to sickness at all. In order to guard against this latter contingency the parents were asked to furnish written excuses in the case of all children returning to school after an absence.

The data in Table 3 seem to indicate that the difference between the school and canvass rates is chiefly a matter of the failure to remember cases of minor sickness over a relatively long period of time. The greatest discrepancies are in the rates for cases of sickness for one or two days' duration. In fact, the frequency of illness causing absence of one day or less as reported by the schools is more than five times the rate based on information obtained in the bimonthly canvasses. However, the difference between the frequency rates in the two groups is not large for cases of sickness of three days' duration or longer.

TABLE 4.—*Morbidity from certain causes among white school children as reported in bimonthly canvasses of a group of families and as reported weekly by school teachers—1,648 children canvassed and about 5,000 children reported on by teachers in Hagerstown, Md., December, 1921, to May, 1922, and September to December, 1922*

Diagnosis	Cases per 1,000 children per school year of 9 months				Ratio of the rate based on school reports to the rate based on canvass reports [1]		Total number of cases	
	All cases		Cases lasting 3 days or longer					
	Reported in bimonthly canvasses	Reported weekly by schools	Reported in bimonthly canvasses	Reported weekly by schools	All cases	Cases lasting 3 days or longer	Reported in bimonthly canvasses	Reported weekly by schools
All causes	931	1,989	646	647	214	100	1,521	9,065
Measles	37	35	37	35	95	95	61	161
Whooping cough	28	23	28	23	82	82	46	104
Chicken pox	12	11	12	10	92	83	20	50
Colds	296	581	167	184	196	110	483	2,645
Grippe and influenza	88	67	81	53	76	65	144	307
Tonsillitis and sore throat	114	225	74	83	197	112	187	1,024
Other respiratory diseases	48	21	30	14	44	47	78	94
Digestive diseases and disorders	76	245	46	52	322	113	125	1,117
Toothache and teeth diseases	13	103	10	13	792	130	22	469
Earache and ear diseases	17	34	10	9	200	90	28	155
Diseases and disorders of eyes	19	45	15	19	237	127	31	206
Headache and neuralgia	21	259	5	23	1,233	460	35	1,178
Skin diseases	31	39	23	24	126	104	50	176
Accidents	35	72	29	22	206	76	57	329
Tonsil or adenoid operation	18	11	18	10	61	56	29	52
Other and unknown diseases and disorders	76	217	61	75	285	123	125	988
Total possible days of exposure								819,420
Total months of exposure							14,707	
Full-time school years of exposure							1,634.11	4,552.33

[1] Base 100=rate for the given cause from canvass reports.

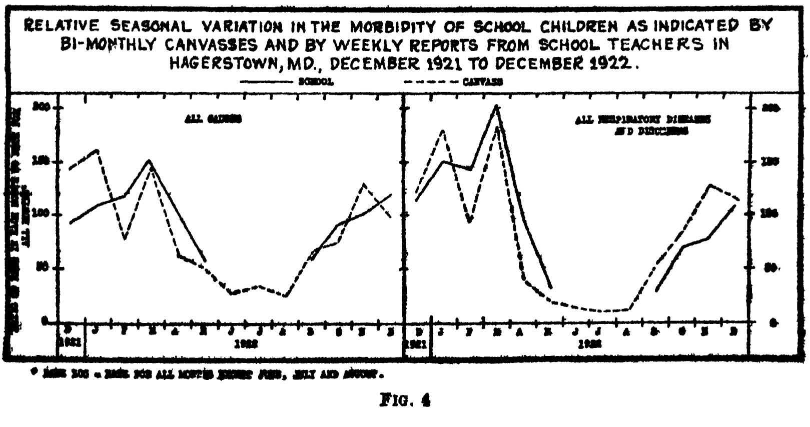
In Table 4 are shown by cause of illness the comparative rates for all cases and for cases causing absence of three days or longer. The rates for the common communicable diseases of childhood and those for influenza are approximately the same for the two groups of children. On the other hand, the incidence rates for minor ailments, such as cold, sore throat, upset stomach, toothache, and headache, are much higher in the school group. When the cases of illness of less than three days' duration are excluded, the incidence rates for the various diseases and disorders are not greatly different in the two groups, except in the case of headache. The rate for headache is 12 times as high for the school group as for the group canvassed in their homes. On eliminating all sickness of less than three days' duration, the headache rate for the school group is still approximately four and one-half times that for the canvassed group. These differences suggest the possibility that in reporting the causes of absence to the teacher, children frequently assigned headache as the cause, when in

reality the absence was due to some other disorder or to some cause other than sickness.

Of all absences reported as due to headache during the period December, 1921, to May, 1923, 80 per cent were of one day's duration or less, and 35 per cent were of one-half day's duration. Only 8 per cent were for three days or longer, and 3 per cent for four days or longer.

Seasonal variation in case rates from the two sources.—Investigation of the sickness occurring in the general population was continued throughout the year. Data are available, therefore, for the summer months as well as for the months during which school was in session. Monthly rates for certain groups of diseases and disorders are shown in Table 5 for that portion of the school population investigated in their homes and for the children under observation in the schools.

The large difference between the number of cases reported in the two groups has already been discussed. Because of this difference the rates based on the canvass and those based on the school reports for any given month obviously are not directly comparable. In order to put them on a comparable basis they were reduced to an index; the rates for each month were divided by the corresponding rate for all months combined, except June, July, and August, for which there were no school reports. These indices are shown in Figure 4.



* INDEX 100 = INDEX FOR ALL MONTHS EXCEPT JUNE, JULY AND AUGUST.

FIG. 4

TABLE 5.—*Seasonal variation in the morbidity from certain groups of diseases: Case incidence by months among white school children in a group of families canvassed bimonthly for sickness records and among school children reported on weekly by school teachers in Hagerstown, Md., December, 1921, to December, 1922*

Diagnosis	All months except June, July, and August	1921 December	1922 January	February	March	April	May	June	July	August	September	October	November	December
CASE RATE PER 1,000 CHILDREN PER SCHOOL YEAR OF 9 MONTHS[1]														
All causes:														
School	1,989	1,892	2,187	2,333	3,024	2,065	1,149	----	----	----	1,216	1,839	2,026	2,385
Canvass	931	1,346	1,510	723	1,352	602	484	258	326	229	624	694	1,204	923
All respiratory diseases and disorders:														
School	894	1,026	1,361	1,280	1,821	847	312	----	----	----	281	629	710	971
Canvass	546	678	987	512	1,012	225	109	69	62	68	292	459	701	629
All other causes														
School	1,095	866	826	1,052	1,203	1,218	837	----	----	----	935	1,210	1,316	1,415
Canvass	385	668	523	211	340	377	375	189	264	161	332	235	503	294
RATIO OF THE RATE IN EACH MONTH TO THE RATE FOR ALL MONTHS EXCEPT JUNE, JULY, AND AUGUST														
All causes:														
School	100	95	110	117	152	104	58	----	----	----	61	92	102	120
Canvass	100	145	162	78	145	65	52	28	35	25	67	75	129	99
All respiratory diseases and disorders														
School	100	115	152	143	204	95	35	----	----	----	31	70	79	109
Canvass	100	124	181	94	185	41	20	13	11	12	53	84	128	115
All other causes														
School	100	79	75	96	110	111	76	----	----	----	85	111	120	129
Canvass	100	174	136	55	88	98	97	49	69	42	86	61	131	76
EXPOSURE														
Number of children:														
School	----	3,643	3,672	3,669	3,657	3,613	3,372	----	----	----	5,117	5,121	5,122	5,106
Canvass	----	1,434	1,434	1,457	1,469	1,503	1,537	1,543	1,500	1,523	1,558	1,546	1,382	1,387

[1] Rates are adjusted for the varying length of the months

The curves of the canvass indices for the entire year give some idea of the relative rates that prevailed in the summer months. The indications are that the rates for the three summer months were probably the lowest for the year, apparently somewhat lower than prevailed in either May or September.

FINANCIAL ASPECT OF SCHOOL ABSENCE DUE TO SICKNESS

Aside from the effect of illness in reducing the physical and mental efficiency of the individual, loss of time from school because of sickness is, in a sense, a financial loss to the community. Educational facilities are usually provided on the basis of the total number of children of school age, with due allowance for the normal increase in population. The number of teachers and the size and number of school buildings must be adequate to care for the maximum number of pupils who may attend school on any one day. On the days when

the number of pupils attending school is less than the maximum provided for, the difference between this number and the number who could be cared for represents a loss. For example, if children lose 4 per cent of the total school days on account of sickness, it is evident that 4 per cent of the expenditures for maintaining the school system is without commensurate returns.

It was found from data for the school months December, 1921–May, 1923, that the children in Hagerstown, Md., lost on account of sickness an average of approximately 4 per cent of the total possible days of attendance. It is estimated by the school authorities of the county that the operation and maintenance of the schools of the city of Hagerstown for the school year 1923–24 cost $235,743. If during that year, as in the preceding terms, 4 per cent of the days enrolled were lost on account of sickness, then 4 per cent of the $235,743, or about $9,500, was really spent for the operation and maintenance of the schools when children were sick and unable to attend school. Of this amount approximately $4,800 is chargeable to the respiratory diseases, $1,700 to the common communicable diseases of children, and $3,000 to all other causes of illness. The absence of "contacts" who were not sick is not included in the above estimate, but only absence of sick children.

SICKNESS AND SCHOOL PROGRESS

Fortunately, every absence does not mean a loss that can never be recovered. An average child probably makes up most of the work lost during short absences, and overaverage children probably experience little difficulty in "catching up" in their work after even relatively long absences. But such "catching up" may not be complete; a child who would be excellent in his studies if he attended school regularly may be only fair or even poor in school work because of absence on account of sickness or other causes. In still other cases the child may be absent so much that he has to repeat the grade the next year.

It would seem that a good measure of the financial loss to the school district on account of sickness would be the number of years children repeat grades because of time lost from school during illness, since the repetition means that the child must be taught again the things he should have learned the first year.

TABLE 6.—*Morbidity from all causes among white school children, classified according to the character of school work and success in passing the grade—Hagerstown, Md., December, 1921–May, 1922*

School rating and promotion	All ages[1] Adjusted[2]	All ages[1] Crude	6–7	8–9	10–11	12–13	14 and over
CASES OF SICKNESS PER CHILD PER SCHOOL YEAR OF 180 SCHOOL DAYS							
Both sexes:							
Excellent or good	1.93	2.01	2.56	2.06	1.97	1.74	1.48
Fair, poor, or very poor	2.45	2.45	2.89	2.79	2.34	2.29	1.97
Promoted	2.07	2.08	2.58	2.26	2.08	1.87	1.64
Failed	2.75	2.79	3.24	2.58	2.27	2.77	2.59
Boys:							
Excellent or good	1.72	1.83	2.58	1.90	1.81	1.40	1.04
Fair, poor, or very poor	2.42	2.38	2.73	2.89	2.37	2.22	1.92
Promoted	1.99	2.02	2.63	2.22	1.98	1.68	1.52
Failed	2.51	2.58	2.84	2.58	2.50	2.58	2.15
Girls:							
Excellent or good	2.14	2.16	2.54	2.20	2.10	1.96	1.92
Fair, poor, or very poor	2.49	2.56	3.10	2.68	2.30	2.36	2.09
Promoted	2.15	2.15	2.54	2.30	2.18	2.02	1.76
Failed	2.89	3.06	3.75	2.57	1.90	3.10	3.15
SCHOOL DAYS LOST ON ACCOUNT OF SICKNESS PER CHILD PER SCHOOL YEAR OF 180 SCHOOL DAYS							
Both sexes:							
Excellent or good	6.66	7.23	11.71	8.30	5.35	4.86	3.54
Fair, poor, or very poor	9.54	9.69	17.11	13.35	6.44	5.45	5.16
Promoted	7.11	7.27	12.69	9.10	5.58	4.61	3.93
Failed	11.64	13.00	19.27	15.95	8.02	7.54	6.91
Boys:							
Excellent or good	6.48	7.12	12.53	8.00	5.29	4.60	2.63
Fair, poor, or very poor	9.18	9.10	16.26	13.55	6.44	4.70	4.94
Promoted	7.10	7.30	13.34	9.02	5.22	4.21	3.99
Failed	10.57	11.86	18.65	14.95	8.41	6.74	4.65
Girls:							
Excellent or good	6.84	7.32	11.02	8.57	5.40	5.01	4.43
Fair, poor, or very poor	9.91	10.54	18.26	13.11	6.43	6.37	5.70
Promoted	7.12	7.24	12.07	9.19	5.93	4.92	3.87
Failed	12.70	14.46	20.06	17.11	7.41	8.85	9.85
NUMBER OF FULL-TIME SCHOOL YEARS OF EXPOSURE							
Both sexes:							
Excellent or good		1,180.6	261.1	306.1	226.7	148.0	213.6
Fair, poor, or very poor		803.2	174.2	145.0	140.8	125.1	191.2
Promoted		1,894.4	360.7	437.3	343.7	261.6	443.8
Failed		268.7	76.9	52.0	41.9	35.7	46.0
Boys:							
Excellent or good		545.0	120.4	145.4	100.9	57.1	106.0
Fair, poor, or very poor		476.0	100.1	78.6	78.2	68.8	134.7
Promoted		926.7	177.1	215.2	168.2	115.8	221.6
Failed		151.6	43.0	27.9	25.6	22.1	26.0
Girls:							
Excellent or good		635.6	140.7	160.7	125.8	90.9	107.6
Fair, poor, or very poor		327.2	74.1	66.4	62.6	56.3	56.6
Promoted		967.8	183.6	222.1	175.4	145.8	222.2
Failed		117.1	33.9	24.1	16.3	13.6	20.0

[1] A few children of unknown age are included in the total.
[2] Adjusted to the age distribution of all children under observation. The rates for both sexes combine are adjusted for sex as well as age.

Data were not available to show the grades repeated, but Table 6 shows sickness rates among children classified according to the character of their school work and their success in passing the grade. Both the case rates and the days lost per child per school year are shown for different ages. Adjusted rates for all ages were computed to eliminate any differences due to the age distribution of the children in the several groups.

Among children of all ages the case rate for the group whose school work was only fair, poor, or very poor was 27 per cent greater than among those whose work was good or excellent. The days lost per child per year was 43 per cent higher in the less satisfactory group.

Comparison was also made of illness among children who were promoted with that among those who failed at the end of the term. The case rate of sickness among children who failed was 33 per cent higher than among those who were promoted, and the days lost per child per year was 64 per cent higher. The number of days lost per case was also considerably greater for those who failed than for those who were promoted.

It seems quite reasonable that absence from school from any cause would adversely affect the work in school. This would seem to be particularly true of sickness, for it would presumably leave the child with less energy and vitality to put into work of either a mental or physical nature. However, it seems clear that there are many other factors, such as mental ability, which are no doubt more closely related to school progress than the sickness rate. But sickness does seem to be one factor in the problem.

SUMMARY

The morbidity records of about 5,000 public-school children at Hagerstown, Md., for the school year 1923–24 were tabulated by cause of illness and month of onset, supplementing a previous report on the same subject. The sickness rates for the school year 1923–24 were somewhat lower than those for 1922–23, particularly for the respiratory diseases and disorders. The chief difference noted was in the incidence of influenza and of colds. The data show no definite epidemic of influenza in 1923–24.

Data for nearly three school years, December, 1921, to May, 1924, were combined, and the incidence rates were computed for certain diseases and disorders. The frequency of common colds was found to be more than twice as great as that of any other illness. Headache, digestive disorders, sore throat, toothache, and influenza were next in frequency in the order named. The respiratory disturbances constituted 46 per cent of all cases of sickness reported during the three years.

The incidence of sickness based on the weekly reports of teachers was compared with similar data obtained by bimonthly canvasses of

a group of families. When cases lasting less than three days are eliminated, the rates are approximately the same except in the case of headache. It would seem that while the bimonthly canvasses revealed most of the cases lasting three days or longer they failed to bring to light all the cases of sickness of but short duration. It would also seem that headache was sometimes reported in the schools as a cause of absence when the absence was not due to sickness at all. However, the method of collecting morbidity data through school reporting seems in most cases to be essentially accurate, and the information seems to be more complete than that obtained by bimonthly canvasses.

Based on a conservative estimate of the cost of the operation and maintenance of the schools and the percentage of the days enrolled that were lost on account of sickness, it was found that for a school population of about 5,000 children, approximately $9,500 was spent for the operation and maintenance of the schools when children were sick and unable to attend them. About $4,800 of this amount is chargeable to the respiratory diseases, $1,700 to the common communicable diseases of children, and $3,000 to all other causes of illness.

Sickness rates among children whose school work was satisfactory were compared with the rates among children whose school work was not satisfactory. The rates for the unsatisfactory group were considerably higher than those for the group doing satisfactory school work.

DEATH RATES IN A GROUP OF INSURED PERSONS

COMPARISON OF PRINCIPAL CAUSES OF DEATH, NOVEMBER AND DECEMBER, 1924, AND RATES FOR THE YEARS 1914-1924, INCLUSIVE

The accompanying tables are taken from the Statistical Bulletin for January, 1925, published by the Metropolitan Life Insurance Co., and present the mortality experience of the industrial insurance department of the company for November and December, 1924, and for the years 1914 to 1924, inclusive. The rates for 1924 are based on a strength of over 15,000,000 insured persons.

It must be borne in mind that these rates apply to a more or less selected group of persons, and that for the years 1920, 1921, and 1922, they were 75 per cent of the death rate for the United States registration area, and in 1923, 73 per cent of that rate.

HEALTH RECORD FOR DECEMBER, 1924

The death record for this group for December was not as favorable as for the other months of 1924. The death rate, 9.3 per 1,000, showed a sharp rise from that of 7.8 for November, and was the highest December rate recorded since 1920. The table shows that this

unfavorable condition was due to increases in the death rates for almost all of the more important causes of death. Lower death rates were recorded in December, however, for all of the principal epidemic diseases of childhood and for typhoid fever.

Death rates (annual basis) for principal causes per 100,000 lives exposed, November and December, 1924, and December and year 1923

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Death rate per 100,000 lives exposed [1]			
	Dec., 1924	Nov., 1924	Dec., 1923	Year 1923
Total, all causes	931.4	776.5	904.1	928.2
Typhoid fever	4.1	5.2	4.5	5.1
Measles	1.5	1.1	5.1	9.5
Scarlet fever	3.7	3.6	5.4	4.4
Whooping cough	5.2	4.7	5.6	7.4
Diphtheria	14.0	13.5	19.6	15.5
Influenza	19.1	9.6	15.6	30.3
Tuberculosis (all forms)	95.2	81.2	90.4	110.1
Tuberculosis of respiratory system	84.2	71.7	82.3	99.7
Cancer	69.5	66.4	72.6	71.8
Diabetes mellitus	16.1	12.6	14.1	16.0
Cerebral hemorrhage	62.9	54.4	66.0	61.2
Organic diseases of heart	139.5	106.7	125.1	127.3
Pneumonia (all forms)	103.0	69.1	90.6	83.9
Other respiratory diseases	18.0	11.9	15.1	13.9
Diarrhea and enteritis	20.6	26.7	20.8	28.2
Bright's disease (chronic nephritis)	69.4	58.2	69.4	68.8
Puerperal state	15.2	12.1	16.0	17.7
Suicides	7.4	7.5	6.7	7.3
Homicides	7.7	7.7	6.9	7.3
Other external causes (excluding suicides and homicides)	62.8	58.1	64.3	62.9
Traumatism by automobile	17.1	17.0	17.4	15.3
All other causes	196.5	166.2	190.3	179.4

[1] All figures include infants insured under one year of age.

RATES FOR YEAR 1924

The death rate for the year 1924 for this group of persons was 8.5 per 1,000, which is 5.2 per cent lower than the rate for 1923, and lower than the rate for any previous year. On the basis of this record, the Bulletin states that the health of the people of the United States and Canada, as reflected by the death rate was probably better in 1924 than ever before, and notes that it is the first year that every important cause of death registered a decrease from the preceding year.

There were 130,790 deaths during the year 1924, which was 7,210 less than would have occurred had the 1923 rate obtained, and 61,958 fewer deaths than would have occurred under the 1911 death rate. It is estimated that up to and including the year 1924 the accumulated saving of lives among these insured persons since 1911 is considerably in excess of 200,000.

No widespread epidemics in 1924.—The year was especially marked by the absence of epidemic prevalence of any disease. The influenza death rate was one of the lowest ever recorded, and the deaths from

pneumonia were fewer than in any previous year except 1921. The epidemic diseases of childhood—measles, scarlet fever, whooping cough, and diphtheria—registered the lowest rates on record. The diphtheria death rate, 12.8 per 100,000, represents a decrease of 50 per cent from the rate of 10 years ago.

Typhoid fever.—The typhoid fever death rate, 4.5 per 100,000, was the lowest ever recorded in the history of the company. This marks a reduction of 13.5 per cent from the rate for 1923, of 38.4 per cent, within the past 5 years, and of 72 per cent in the past 10 years.

Tuberculosis.—A continued reduction is shown in the death rate for tuberculosis—from 110.5 per 100,000 in 1923 to 104.7 in 1924. The decline since 1911 (224.6) was 53.4 per cent. For pulmonary tuberculosis alone the rate dropped to 93.7 per 100,000, a decline of 6.9 per cent from that for 1923. For the first time the rate for this form of tuberculosis among this group was under 100 per 100,000; and it is noted that these low rates are for wage earners and their families, living in cities, who uniformly show higher death rates for these diseases than the rates for the general population.

Cancer.—The cancer mortality rate is lower than in 1923 or 1922, but is the same as that for 1921 and higher than the rate for any year prior to 1921.

The Bulletin states:

In direct contrast to what has been accomplished in the saving of human life in fields like typhoid fever, tuberculosis, maternal diseases, diarrheal complaints, and diabetes, the record for cancer shows no real progress. If anything at all has been accomplished, it is limited to keeping the death rate from rising. That is clearly the case so far as the wage-earning group of the American and Canadian populations is concerned. An intensive study made by the Metropolitan in 1924 shows that such small increase as has been recorded in the last 13 or 14 years applies to the older ages only. Between 35 and 55 years, there has been a slightly declining tendency. Beyond 55, the more advanced the age, the greater has been the rate of increase. The gravity of the cancer problem is concentrated on the higher age groups, not only as to maximum incidence but as to increasing mortality. Nevertheless, more deaths occur in childhood and adolescence than is generally realized. Among Metropolitan industrial policyholders more than 2 per cent of the cancer mortality during a period of 12 years occurred among persons under 25 years of age. At all ages combined, the increase has been greater among males than among females; and in one group, colored females, a slightly declining tendency has been observed.

Another fact of interest which has developed in this study was that if a boy or girl once reaches the age of 10 there is more likelihood of ultimately dying from cancer than from tuberculosis. This has not been generally realized, because the crude death rate for tuberculosis is still, and has always been, much higher than that for cancer. Nevertheless, the probabilities are that of 100 boys 10 years old more than 8 will eventually die from cancer, whereas less than 7 will succumb to tuberculosis. For females the probability of dying from cancer is even greater, being 87 per cent in excess of the chance of eventual death from tuberculosis.

Diabetes.—The death rate for diabetes declined to 15.1 per 100,000 from a rate of 16.2 in 1923, and a rate of 17.2 in 1922. This is stated to be significant in view of the recent increasing use of the insulin treatment in a period which was showing a tendency toward increased death rates for diabetes.

"*Degenerative diseases.*"—Cerebral hemorrhage, organic heart disease, and chronic nephritis registered slight declines. Mortality from organic heart disease still stands, as in 1923 and 1922, the leading cause of death. In 1921 it shared first place with tuberculosis, and in all years prior to that it was outranked by the latter.

Puerperal diseases.—Deaths from puerperal diseases continued the decline begun in 1921. Deaths from puerperal septicemia dropped to 6.6 per 100,000 in 1924, the lowest record for this group of women.

Alcoholism.—The death rate for alcoholism shows a slight decline from that for 1923, although it was still higher than the rates for 1922, 1921, and 1920.

Deaths from wood alcohol poisoning numbered 18, as compared with 27 in 1923, 36 in 1922, and 71 in 1921.

The death rate for cirrhosis of the liver was the same as in 1923, 5.8 per 100,000.

Accidents.—Increases were recorded for accidental burns and accidental drownings, and fewer deaths from falls, machinery accidents, and railroad accidents.

Deaths from automobile accidents continued to increase in 1924, the rate being 16.0 as compared with 15.4 in 1923. Mortality from this cause in this group has more than doubled since 1916, has tripled since 1915, quadrupled since 1913, and increased seven fold since 1911. Some small comfort is suggested in the decline in the rate of increase in this cause of death, the rise in 1924 over 1923 being 4 per cent, whereas, in 1923, the increase was 13 per cent over 1922, and in 1922 it was 12 per cent over 1921. Automobile fatalities still head the list of accidental deaths, causing four times as many deaths as railroad accidents, and more than twice as many as result from accidental falls or accidental drownings.

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Death rates per 100,000 lives exposed (ages one and over) for principal causes of death, 1914-1924

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	1924	1923	1922	1921	1920	1919	1918	1917	1916	1915	1914
All causes of death	850.2	897.1	852.9	870.6	989.4	1,003.0	1,559.2	1,161.1	1,168.1	1,130.9	1,152.8
Typhoid fever	4.5	5.2	5.7	6.7	6.7	7.3	11.5	12.1	13.0	12.9	16.1
Communicable diseases of childhood	26.3	33.1	29.8	37.9	43.1	31.5	41.6	46.8	40.8	36.4	48.2
Measles	5.7	8.4	4.3	3.2	8.5	3.5	8.6	11.1	9.9	5.7	6.9
Scarlet fever	4.3	4.4	4.9	7.0	6.0	3.9	3.6	6.0	4.1	4.6	9.8
Whooping cough	3.5	4.8	2.6	3.9	6.6	3.2	10.1	5.1	5.8	4.7	5.8
Diphtheria	12.8	15.5	18.0	23.8	22.1	20.9	19.3	24.6	21.0	21.4	25.7
Influenza and pneumonia	84.5	107.7	95.3	76.5	159.5	214.1	542.2	135.4	138.1	119.5	111.6
Influenza	14.2	30.1	21.7	8.7	53.5	93.9	272.4	14.4	23.8	13.0	11.3
Pneumonia	70.3	77.6	73.7	67.8	106.1	117.2	269.8	121.0	114.3	106.5	100.3
Meningococcus meningitis	.6	.7	.7	.9	1.0	1.3	2.8	3.5	1.5	1.3	1.5
Tuberculosis; all forms	104.7	110.5	114.2	117.4	137.9	156.5	180.0	188.9	190.2	197.8	204.5
Tuberculosis of respiratory system	93.7	100.6	103.6	105.6	124.0	141.6	171.2	172.3	172.8	180.0	185.2
Cancer, all forms	71.7	72.7	72.0	71.7	69.8	67.0	67.2	70.9	70.3	70.9	69.8
Diabetes mellitus	15.1	16.2	17.2	15.5	14.1	13.4	14.0	15.3	15.9	15.1	14.2
Cerebral hemorrhage apoplexy	61.2	61.9	62.9	62.1	61.3	59.8	64.0	66.8	68.7	68.5	69.2
Diseases of heart	125.5	128.7	126.7	117.4	117.0	113.9	141.7	142.0	140.2	136.7	138.1
Diarrhea and enteritis	11.4	11.1	10.8	14.2	15.8	16.9	23.4	25.5	26.2	24.4	24.7
1 to 2 years	6.0	5.5	4.9	6.0	7.0	7.5	11.6	11.9	12.5	11.3	11.9
2 years and over	5.3	5.7	5.9	8.1	8.8	9.5	11.8	13.6	13.7	13.1	12.8
Chronic nephritis (Bright's disease)	66.7	69.6	70.3	68.0	70.8	73.5	86.8	95.7	99.0	95.7	95.4
Puerperal state, total	17.1	17.9	19.0	19.8	23.0	20.0	27.4	18.2	17.6	18.0	19.8
Puerperal septicemia	6.6	6.9	7.4	8.5	8.6	6.7	7.3	7.5	7.2	7.2	8.4
Puerperal album. and convulsions	4.4	4.2	4.7	4.9	5.0	4.8	4.9	5.1	5.0	4.8	5.1
Accidents of pregnancy	1.6	1.8	1.7	1.6	3.1	3.0	6.9	1.6	1.4	1.8	1.7
Total external causes	77.1	77.8	71.8	72.0	72.0	94.2	128.9	106.7	99.5	88.2	89.2
Suicides	7.3	7.4	7.5	7.6	6.1	6.8	7.6	9.3	9.8	12.2	12.3
Homicides	7.2	7.3	6.3	6.7	5.8	6.9	6.2	7.4	6.9	6.9	7.0
Accidents, total	62.5	63.0	58.0	57.5	59.6	63.8	75.5	76.5	73.2	67.3	69.9
Accidental burns	6.4	6.3	6.1	6.6	8.1	8.1	9.0	8.9	8.8	8.6	8.4
Accidental drowning	7.3	6.7	7.3	8.2	6.7	8.6	9.4	8.7	9.7	11.9	10.0
Accidental traum. by fall	7.8	8.4	7.3	7.1	7.3	8.0	10.4	11.9	13.1	11.9	12.6
Accidental traum. by machines	1.3	1.7	1.6	1.0	1.7	1.6	2.4	2.0	1.7	1.4	1.5
Railroad accidents	4.0	4.9	4.1	3.9	5.2	5.7	7.8	8.5	7.9	7.4	7.5
Automobile accidents	16.0	15.4	13.6	12.2	11.1	10.7	10.3	9.7	7.4	5.4	4.8
All other accidents	19.8	19.5	18.0	18.5	19.5	21.2	26.1	26.8	24.6	20.7	25.1
War deaths	------	------	.1	.1	.5	16.6	39.7	13.5	9.6	1.8	------
Other diseases and conditions	183.8	184.0	186.5	190.5	197.4	193.5	218.7	233.2	247.1	245.5	250.5

DIGEST OF CURRENT PUBLIC HEALTH COURT DECISION

Manufacturer liable for injury from glass in canned spinach.—(Massachusetts Supreme Judicial Court.) The defendant, a corporation which prepared and canned spinach and other food products, was held liable for injury to the plaintiff, caused by eating spinach containing glass. The spinach was taken from a can purchased by the plaintiff from a retailer, who had purchased it from a wholesale grocer, to whom it had been sold by the defendant manufacturer. (Richenbacher *v.* California Packing Corporation, 145 N. E. 281.)

DEATHS DURING WEEK ENDED FEBRUARY 14, 1925

Summary of information received by telegraph from industrial insurance companies for week ended February 14, 1925, and corresponding week of 1924. (From the Weekly Health Index, February 17, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended February 14, 1925	Corresponding week, 1924
Policies in force	58, 621, 734	54, 993, 698
Number of death claims	11, 708	10, 403
Death claims per 1,000 policies in force, annual rate	10. 4	9. 9

Deaths from all causes in certain large cities of the United States during the week ended February 14, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, February 17, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Feb 14, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Feb. 14, 1925 [2]
	Total deaths	Death rate [1]		Week ended Feb 14, 1925	Corresponding week, 1924	
Total (63 cities)	7, 469	14. 3	[3] 14 2	863	[3] 912	
Akron	35			5	4	55
Albany [4]	40	17 4	14 1	5	3	111
Atlanta	109	24 4	22 2	13	16	
Baltimore [4]	268	17 5	16 5	37	28	108
Birmingham	72	18 3	18 2	6	11	
Boston	288	19. 2	16 9	34	33	90
Bridgeport	29			2	3	32
Buffalo	153	14 4	12 4	15	24	61
Cambridge	34	15 8	14 4	3	3	52
Camden	40	16 2	16. 9	7	4	115
Chicago [4]	687	12. 0	12 1	99	113	87
Cincinnati	131	16 7	17 6	11	20	65
Cleveland	185	10 3	12 5	20	38	50
Columbus	70	13 3	15 9	6	7	56
Dallas	70	18 9	16 9	11	7	
Dayton	42	12. 7	12. 3	5	3	80
Denver	95			10	10	
Des Moines	37	12 9	11 1	1	4	17
Detroit	280			56	55	95
Duluth	21	9 9	13. 5	3	2	63
Erie	28			6	7	117
Fall River [4]	33	14. 2	15 9	8	9	115
Flint	13			2	8	33
Fort Worth	27	9 2	8. 1	5	1	
Grand Rapids	34	11 8	10. 9	7	1	109
Houston	54			3	8	
Indianapolis	101	14 7	13 7	6	10	41
Jacksonville, Fla	42	20 9	16 8	4	4	89
Jersey City	83	13. 7	15 9	10	14	70
Kansas City, Mo	112	15 9	15. 7	16	9	
Los Angeles	236			29	17	81
Louisville	82	16. 5	16. 7	10	16	87
Lowell	24	10. 7	13 1	5	3	87
Lynn	24	12 0	7 5	3	3	80
Memphis	67	20. 0	20 9	6	4	
Milwaukee	113	11. 7	11. 4	26	22	119
Minneapolis	101	12 4	10. 4	15	10	80
Nashville [4]	37	15. 5	24. 5	3	7	
New Bedford	29	11. 2	12 2	5	7	83
New Haven	50	14. 6	13. 0	6	6	78
New Orleans	207	26. 0	25. 0	18	11	
New York	1, 656	14. 1	12. 9	185	191	74
Bronx Borough	171	9. 9	10. 4	13	15	45
Brooklyn Borough	583	13. 6	12. 3	67	67	70
Manhattan Borough	719	16. 6	15. 0	92	92	92
Queens Borough	137	12. 4	8. 6	11	11	55
Richmond Borough	46	17. 9	23. 5	2	6	36

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 62 cities.
[4] Deaths for week ended Friday, February 13, 1925.

Deaths from all causes in certain large cities of the United States during the week ended February 14, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924—Continued

City	Week ended Feb. 14, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Feb. 14, 1925 [2]
	Total deaths	Death rate [1]		Week ended Feb 14, 1925	Corresponding week, 1924	
Newark, N. J	105	12.1	13.2	18	13	82
Norfolk	60	18.5	12.1	12	9	213
Oakland	63	12.9	14 4	5	3	59
Oklahoma City	24	11.7	14.0	2	3	
Omaha	69	17.0	13.8	8	6	77
Paterson	43	15.8	15.6	5	1	84
Philadelphia	591	15.6	15.4	57	65	72
Pittsburgh	176	14.5	16 1	20	32	70
Portland, Oreg	51	9.4	11.6	3	4	31
Providence	63	13 4	16.9	10	9	80
Richmond	74	20 7	16.7	6	8	73
Rochester	68	10.7		5		40
St Louis	195	12.4	14.9	18	15	
St Paul	49	10 4	9 4	3	6	26
Salt Lake City [4]	32	12 7	17 0	5	4	78
San Antonio	55	14 5	16 1	6	13	
San Francisco	140	13.1	15 1	14	14	81
Schenectady	16	8.2	14 5	0	4	0
Seattle	63			2	9	20
Somerville	28	14 3	11.4	4	3	107
Spokane	27			6	1	131
Springfield, Mass	40	13.7	15 1	5	2	74
Syracuse	46	12 5	12.8	6	6	75
Tacoma	20	10 0	12.1	0	4	0
Toledo	65	11.8	12.1	11	8	100
Trenton	49	19 4	14.5	7	4	114
Utica	23	11.2	13 9	1	3	21
Washington, D. C	150	15.7	15.5	2	10	11
Waterbury	19			1	3	22
Wilmington, Del	43	18.4	15.2	8	6	182
Yonkers	21	9 8	11 9	4	6	88
Youngstown	41	13.4	14.8	4	7	51

[1] Annual rate per 1,000 population
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924 Cities left blank are not in the registration area for births.
[4] Deaths for week ended Friday, February 13, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended February 21, 1925

ALABAMA	Cases
Cerebrospinal meningitis	1
Chicken pox	71
Diphtheria	17
Dysentery	2
Influenza	1,353
Malaria	10
Measles	91
Mumps	74
Pellagra	1
Pneumonia	201
Scarlet fever	20
Smallpox	208
Tetanus	1
Trachoma	4
Tuberculosis	38
Typhoid fever	15
Whooping cough	31

ARIZONA	
Chicken pox	12
Diphtheria	16
Measles	45
Mumps	23
Pneumonia	6
Scarlet fever	11
Smallpox	5
Tuberculosis	75
Typhoid fever	2
Whooping cough	6

ARKANSAS	
Chicken pox	33
Diphtheria	9
Hookworm disease	18
Influenza	359
Malaria	31
Measles	13
Mumps	32
Pellagra	4
Scarlet fever	8
Smallpox	27
Trachoma	7
Tuberculosis	10
Typhoid fever	7
Whooping cough	16

CALIFORNIA	Cases
Cerebrospinal meningitis:	
Alameda	1
San Francisco	1
Diphtheria	107
Influenza	146
Lethargic encephalitis—Sonoma County	1
Measles	54
Poliomyelitis—Alameda	3
Scarlet fever	132
Smallpox:	
Los Angeles	42
Los Angeles County	20
San Diego	37
San Francisco	7
Scattering	64
Typhoid fever	8

COLORADO [1] (Exclusive of Denver)	
Cerebrospinal meningitis	3
Chicken pox	31
Diphtheria	9
Lethargic encephalitis	1
Measles	2
Mumps	17
Pneumonia	5
Scarlet fever	35
Smallpox	1
Trachoma	6
Tuberculosis	20
Typhoid fever	1
Whooping cough	5

CONNECTICUT	
Cerebrospinal meningitis	1
Chicken pox	78
Conjunctivitis (infectious)	1
Diphtheria	57
German measles	69
Influenza	27
Lethargic encephalitis	1
Measles	45
Mumps	87
Pneumonia (all forms)	17

[1] For two weeks ended Feb. 21, 1925.

CONNECTICUT—continued	Cases
Scarlet fever	165
Septic sore throat	12
Trichinosis	1
Tuberculosis (all forms)	32
Typhoid fever	7
Whooping cough	41
FLORIDA	
Diphtheria	12
Influenza	29
Malaria	3
Poliomyelitis	1
Scarlet fever	4
Smallpox	3
Typhoid fever	8
ILLINOIS	
Cerebrospinal meningitis—Cook County	2
Diphtheria	
Cook County	67
Scattering	52
Influenza	35
Lethargic encephalitis—Moultrie County	1
Measles	725
Pneumonia	405
Poliomyelitis:	
Bond County	1
Jackson County	2
Scarlet fever:	
Cook County	328
Kane County	12
Madison County	8
Monroe County	13
Peoria County	10
St. Clair County	12
Sangamon County	17
Will County	11
Scattering	112
Smallpox	
Madison County	39
St. Clair County	11
Scattering	52
Tuberculosis	307
Typhoid fever	15
Whooping cough	261
INDIANA	
Cerebrospinal meningitis—Martin County	1
Chicken pox	104
Diphtheria	37
Influenza	50
Measles	204
Mumps	13
Pneumonia	15
Scarlet fever:	
Allen County	20
Huntington County	18
Lake County	16
La Porte County	10
Marion County	9
Randolph County	12
St. Joseph County	31
Scattering	85
Smallpox:	
Cass County	9
Hamilton County	15
Marion County	20
Miami County	15
Scattering	53

[1] Week ended Friday.

INDIANA—continued	Cases
Tuberculosis	58
Typhoid fever	10
Whooping cough	24
IOWA	
Diphtheria	15
Scarlet fever	54
Smallpox	22
Typhoid fever	1
KANSAS	
Cerebrospinal meningitis	4
Chicken pox	155
Diphtheria	63
German measles	1
Influenza	18
Lethargic encephalitis	1
Measles	10
Mumps	474
Pneumonia	86
Scarlet fever	154
Smallpox	16
Tuberculosis	38
Typhoid fever	6
Whooping cough	33
LOUISIANA	
Diphtheria	21
Hookworm disease	32
Influenza	95
Leprosy	1
Pneumonia	70
Scarlet fever	15
Smallpox	27
Tuberculosis	23
Typhoid fever	27
Whooping cough	13
MAINE	
Chicken pox	83
Diphtheria	9
German measles	5
Influenza	4
Lethargic encephalitis	2
Measles	3
Mumps	217
Pneumonia	34
Scarlet fever	24
Septic sore throat	4
Tuberculosis	15
Typhoid fever	3
Whooping cough	14
MARYLAND [1]	
Cerebrospinal meningitis	2
Chicken pox	60
Diphtheria	41
Influenza	69
Leprosy	1
Lethargic encephalitis	1
Malaria	1
Measles	46
Mumps	71
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pneumonia (all forms)	172
Scarlet fever	77
Septic sore throat	1

MARYLAND—continued	Cases
Tetanus	1
Tuberculosis	83
Typhoid fever	6
Whooping cough	117

MASSACHUSETTS	
Cerebrospinal meningitis	2
Chicken pox	224
Conjunctivitis (suppurative)	15
Diphtheria	137
German measles	353
Influenza	49
Lethargic encephalitis	3
Measles	574
Mumps	180
Ophthalmia neonatorum	34
Pneumonia (lobar)	212
Poliomyelitis	1
Scarlet fever	369
Septic sore throat	1
Tuberculosis (all forms)	145
Typhoid fever	7
Whooping cough	187

MICHIGAN	
Diphtheria	67
Measles	188
Pneumonia	141
Scarlet fever	343
Smallpox	20
Tuberculosis	76
Typhoid fever	7
Whooping cough	95

MINNESOTA	
Cerebrospinal meningitis	1
Chicken pox	121
Diphtheria	66
Influenza	2
Measles	23
Pneumonia	4
Scarlet fever	211
Smallpox	45
Tuberculosis	44
Typhoid fever	4
Whooping cough	22

MISSISSIPPI	
Diphtheria	10
Influenza	553
Scarlet fever	4
Smallpox	56
Typhoid fever	15

MISSOURI (Exclusive of Kansas City)	
Chicken pox	70
Diphtheria	57
Influenza	238
Lethargic encephalitis	1
Malaria	7
Measles	35
Mumps	69
Pneumonia	22
Scarlet fever	243
Septic sore throat	9
Smallpox	18

MISSOURI—continued	Cases
Tetanus	1
Tuberculosis	40
Typhoid fever	5
Whooping cough	55

MONTANA	
Chicken pox	20
Diphtheria	10
German measles	45
Measles	34
Mumps	24
Poliomyelitis—Bozeman	1
Scarlet fever	37
Smallpox	15
Tuberculosis	10
Typhoid fever	1
Whooping cough	16

NEW JERSEY	
Anthrax	1
Cerebrospinal meningitis	1
Chicken pox	187
Diphtheria	119
Influenza	43
Measles	180
Pneumonia	162
Poliomyelitis	1
Scarlet fever	313
Smallpox	8
Typhoid fever	10
Whooping cough	253

NEW MEXICO	
Chicken pox	21
Diphtheria	1
German measles	18
Influenza	12
Measles	4
Mumps	20
Pneumonia	21
Scarlet fever	6
Tuberculosis	21
Typhoid fever	1

NEW YORK (Exclusive of New York City)	
Diphtheria	112
Influenza	42
Lethargic encephalitis	5
Measles	392
Pneumonia	346
Scarlet fever	394
Smallpox	6
Typhoid fever	24
Whooping cough	222

NORTH CAROLINA	
Chicken pox	161
Diphtheria	33
German measles	3
Measles	41
Ophthalmia neonatorum	1
Poliomyelitis	1
Scarlet fever	26
Septic sore throat	1
Smallpox	79
Typhoid fever	2
Whooping cough	70

OKLAHOMA	Cases
(Exclusive of Oklahoma City and Tulsa)	
Cerebrospinal meningitis:	
Bryan County	1
Hughes County	1
Jefferson County	1
Diphtheria	23
Influenza	543
Pneumonia	150
Scarlet fever	22
Smallpox	
Blaine County	22
Scattering	8
Typhoid fever	14

OREGON	Cases
Cerebrospinal meningitis	1
Chicken pox	16
Diphtheria:	
Portland	12
Scattering	13
Influenza	1
Measles	4
Mumps	15
Pneumonia	[1] 9
Poliomyelitis	2
Scarlet fever	36
Septic sore throat	1
Smallpox:	
Portland	12
Scattering	9
Tuberculosis	20
Typhoid fever	5
Whooping cough	5

SOUTH DAKOTA	Cases
Chicken pox	6
Diphtheria	1
Measles	1
Pneumonia	4
Scarlet fever	13
Smallpox	8
Tuberculosis	1

TEXAS	Cases
Chicken pox	149
Diphtheria	46
Dysentery (epidemic)	7
Influenza	2,829
Lethargic encephalitis	2
Measles	106
Mumps	138
Paratyphoid fever	1
Pellagra	8
Pneumonia	347
Scarlet fever	42
Smallpox	72
Trachoma	13
Tuberculosis	30
Typhoid fever	28
Whooping cough	61

VERMONT	Cases
Chicken pox	57
Diphtheria	3
Measles	1

[1] Deaths.

VERMONT—continued	Cases
Mumps	13
Pneumonia	2
Scarlet fever	12
Whooping cough	1

WASHINGTON	Cases
Chicken pox	121
Diphtheria	45
German measles	46
Measles	4
Mumps	182
Pneumonia	1
Scarlet fever	43
Smallpox	54
Tuberculosis	20
Typhoid fever	9
Whooping cough	30

WEST VIRGINIA	Cases
Cerebrospinal meningitis—Wheeling	1
Diphtheria	7
Scarlet fever	7
Smallpox	7
Typhoid fever	2

WISCONSIN	Cases
Milwaukee	
Chicken pox	50
Diphtheria	15
German measles	437
Influenza	3
Lethargic encephalitis	1
Measles	426
Mumps	106
Pneumonia	9
Poliomyelitis	1
Scarlet fever	22
Smallpox	3
Tuberculosis	17
Whooping cough	32
Scattering	
Chicken pox	113
Diphtheria	34
German measles	331
Influenza	34
Lethargic encephalitis	1
Measles	163
Mumps	465
Pneumonia	34
Scarlet fever	145
Smallpox	43
Tuberculosis	17
Whooping cough	65

WYOMING	Cases
Cerebrospinal meningitis	1
Chicken pox	9
Diphtheria	4
Measles	3
Mumps	12
Pneumonia	2
Scarlet fever	14
Smallpox	1
Tuberculosis	1
Typhoid fever	2

Reports for Week Ended February 14, 1925

ARIZONA	Cases
Chicken pox	5
Diphtheria	2
Measles	19
Mumps	23
Pneumonia	9
Scarlet fever	6
Smallpox	8
Tuberculosis	1
Typhoid fever	1
Whooping cough	2

DISTRICT OF COLUMBIA	Cases
Chicken pox	21
Diphtheria	35
Influenza	3
Measles	12
Pneumonia	49
Scarlet fever	44
Smallpox	1
Tuberculosis	29
Typhoid fever	10
Whooping cough	5

NEBRASKA	Cases
Cerebrospinal meningitis	2
Chicken pox	31
Diphtheria	4
Measles	1
Mumps	3
Pneumonia	1
Poliomyelitis	1
Scarlet fever	14
Smallpox	31
Tuberculosis	2
Typhoid fever	4
Whooping cough	4

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
December, 1924										
Ohio	4	687	71	0	257	0	6	1,722	358	107
January, 1925										
Alabama	5	153	1,679	69	73	10	1	125	995	55
Florida		40	153	22	8			9	4	49
Georgia	1	68	446	12	26	2		30	14	9
Illinois	9	584	138	5	1,575		5	2,064	210	119
Louisiana	2	80	215	18	20	6	1	77	265	144
Maryland	1	150	627	0	177	0	4	411		44
Minnesota	2	264	1		75		1	1,220	841	11
New Jersey	1	445	73		483		1	1,024	35	50
New York	22	1,366	434	3	1,023		16	2,539	58	342
Rhode Island		63	6	0		0	0	115		7
West Virginia	6	132	244		136			244	282	115
Wisconsin	3	227	160	0	1,156	0	3	688	263	14

RECIPROCAL NOTIFICATION, JANUARY, 1925

Notifications regarding communicable diseases sent during the month of January, 1925, to other State health departments by departments of health of certain States

Referred by—	Chicken pox	Poliomyelitis	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever
Illinois			1	5	11	3
Massachusetts						2
Minnesota		1	1		46	2
New York			2	1		7
New Jersey						1
Washington	1					

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended February 7, 1925:

Los Angeles, Calif.

Week ended February 7, 1925:	
Number of rats examined	3, 841
Number of rats found to be plague infected	1
Number of squirrels examined	146
Number of squirrels found to be plague infected	0
Totals to February 7, 1925:	
Number of rats examined	46, 090
Number of rats found to be plague infected	82
Number of squirrels examined	1, 719
Number of squirrels found to be plague infected	0

Oakland, Calif.

Week ended February 7, 1925:	
Number of rats trapped	930
Number of rats found to be plague infected	2
Totals to February 7, 1925:	
Number of rats trapped	8, 273
Number of rats found to be plague infected	16

New Orleans, La.

Week ended February 7, 1925:	
Number of vessels inspected	289
Number of inspections made	808
Number of vessels fumigated with cyanide gas	38
Number of rodents examined for plague	5, 179
Number of rodents found to be plague infected	0
Totals to February 7, 1925:	
Number of rodents examined	32, 016
Number of rodents found to be plague infected	12

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended February 7, 1925, 35 States reported 1,709 cases of diphtheria. For the week ended February 9, 1924, the same States reported 2,195 cases of this disease. One hundred and three cities, situated in all parts of the country and having an aggregate population of more than 28,700,000, reported 965 cases of diphtheria for the week ended February 7, 1925. Last year, for the corresponding week, they reported 1,304 cases. The estimated expectancy for these cities was 1,169 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Twenty-nine States reported 2,232 cases of measles for the week ended February 7, 1925, and 16,397 cases of this disease for the week ended February 9, 1924. One hundred and three cities reported 1,399 cases of measles for the week this year, and 5,792 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 35 States—this year, 4,290 cases; last year, 4,599; 103 cities—this year, 2,273; last year, 1,922; estimated expectancy, 1,072 cases.

Smallpox.—For the week ended February 7, 1925, 35 States reported 1,298 cases of smallpox. Last year, for the corresponding week, they reported 1,168 cases. One hundred and three cities reported smallpox for the week as follows: 1925, 420 cases; 1924, 427 cases; estimated expectancy, 90 cases. These cities reported 19 deaths from smallpox for the week this year, 13 of which occurred at Minneapolis.

Typhoid fever.—Two hundred and sixty-seven cases of typhoid fever were reported for the week ended February 7, 1925, by 34 States. For the corresponding week of 1924 the same States reported 266 cases. One hundred and three cities reported 73 cases of typhoid fever for the week this year, and 76 cases for the week last year. The estimated expectancy for these cities was 45 cases.

Influenza and pneumonia.—The reports indicate a decided increase in cases of influenza in Texas and certain other southern States when compared with the corresponding week for last year, but the reports from most other sections of the country show only slight increases. Deaths from influenza and pneumonia (combined) were reported for the week by 103 cities as follows: 1925, 1,372 deaths; 1924, 1,161 deaths.

City reports for week ended February 7, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	19	2	1	0	0	0	50	1
New Hampshire:									
Concord	22,408	0	0	0	0	0	1	0	0
Vermont:									
Barre	[1] 10,008	0	0	1	0	0	0	8	0
Burlington	23,618	1	1	1	0	0	0	11	0
Massachusetts:									
Boston	770,400	0	70	37	48	7	148	9	48
Fall River	120,912	3	7	1	1	1	1	1	5
Springfield	144,227	0	4	2	5	4	60	7	3
Worcester	191,927	25	5	6	0	0	1	2	0

[1] Population Jan. 1, 1920.

City reports for week ended February 7, 1925—**Continued**

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND—con.									
Rhode Island:									
Pawtucket	68, 799	6	2	3	0	0	0	0	2
Providence	242, 378	0	14	9	0	0	3	0	9
Connecticut:									
Bridgeport	[1] 143, 555	0	9	2	0	1	1	2	3
Hartford	[1] 138, 036	10	8	15	-------	4	1	2	7
New Haven	172, 967	37	4	0	-------	2	16	2	7
MIDDLE ATLANTIC									
New York:									
Buffalo	536, 718	14	25	14	0	1	32	12	9
New York	5, 927, 625	209	228	207	99	26	49	38	272
Rochester	317, 867	10	11	0	0	0	12	42	3
Syracuse	184, 511	4	9	1	0	0	3	27	4
New Jersey:									
Camden	124, 157	3	4	5	0	0	10	0	7
Newark	438, 699	44	24	14	11	1	57	12	14
Trenton	127, 390	1	7	2	0	0	7	0	3
Pennsylvania:									
Philadelphia	1, 922, 788	73	77	79	-------	14	122	38	110
Pittsburgh	613, 442	38	26	15	-------	6	113	20	75
Reading	110, 917	15	4	1	0	0	0	10	3
Scranton	140, 636	6	6	1	-------	2	0	0	10
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406, 312	15	11	1	-------	4	2	6	18
Cleveland	888, 519	61	33	40	6	2	8	7	38
Columbus	261, 082	18	5	3	0	2	2	2	6
Toledo	268, 338	13	7	5	0	0	47	0	10
Indiana:									
Fort Wayne	93, 573	10	4	4	0	0	1	0	1
Indianapolis	342, 718	46	15	6	-------	2	3	3	17
South Bend	76, 709	9	1	0	0	0	9	0	1
Terre Haute	68, 939	7	2	0	0	0	2	0	1
Illinois:									
Chicago	2, 886, 121	100	124	76	11	4	275	21	78
Cicero	55, 968	0	2	1	0	0	15	1	3
Springfield	61, 833	3	2	1	1	1	5	20	2
Michigan:									
Detroit	995, 668	61	68	37	5	2	2	13	47
Flint	117, 968	6	9	1	0	0	1	0	2
Grand Rapids	145, 947	6	4	4	2	0	9	3	4
Wisconsin:									
Madison	42, 519	9	1	0	0	0	1	165	1
Milwaukee	484, 595	40	19	17	0	0	268	47	0
Racine	64, 393	29	1	3	0	0	8	20	2
Superior	[1] 39, 671	3	1	2	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106, 289	9	3	0	0	0	0	0	5
Minneapolis	409, 125	78	20	23	0	1	1	8	7
St. Paul	241, 891	29	13	14	0	0	2	27	8
Iowa:									
Davenport	61, 262	2	1	1	0	-------	0	1	-------
Des Moines	140, 923	0	4	6	0	-------	0	0	-------
Sioux City	79, 662	6	1	1	0	-------	0	3	-------
Waterloo	39, 667	3	0	1	0	-------	0	1	-------
Missouri:									
Kansas City	351, 819	27	10	10	10	8	1	12	23
St. Joseph	78, 232	1	3	1	0	0	1	0	2
St. Louis	803, 853	37	51	47	0	0	2	2	-------
North Dakota:									
Fargo	24, 841	-------	0	-------	-------	-------	-------	-------	-------
Grand Forks	14, 547	1	0	1	0	-------	0	0	-------
South Dakota:									
Aberdeen	15, 829	0	-------	0	0	-------	0	0	-------
Sioux Falls	29, 206	2	1	2	0	0	0	0	[illegible]

[1] Population Jan. 1, 1920.

City reports for week ended February 7, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
WEST NORTH CENTRAL—continued									
Nebraska:									
Lincoln	58,761	5	2	0	0	0	2	1	30
Omaha	204,382	15	6	7	0	0	0	0	3
Kansas:									
Topeka	52,555	25	2	2	0	0	1	143	1
Wichita	79,261	19	2	11	0	0	0	2	1
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	...	2	...	...	...	...	...	...
Maryland:									
Baltimore	773,580	61	32	26	45	3	5	9	60
Cumberland	32,361	...	0	1	4	0	0	...	2
Frederick	11,301	...	1	1	0	0	0	...	0
District of Columbia:									
Washington	[1] 437,571	27	15	19	3	5	7	...	22
Virginia:									1
Lynchburg	30,277	2	1	5	0	0	0	25	6
Norfolk	159,089	13	2	2	0	0	1	48	12
Richmond	181,044	0	4	6	...	3	2	0	4
Roanoke	55,502	1	2	1	0	0	[illegible]	0	
West Virginia:									0
Charleston	45,597	4	2	2	0	0	6	0	
Huntington	57,918	0	1	1	0	...	0	0	...
Wheeling	[1] 56,208	0	1	0	0	0	1	3	7
North Carolina:									
Raleigh	29,171	5	1	0	0	0	0	0	1
Wilmington	35,719	3	1	2	0	0	0	3	3
Winston-Salem	56,230	6	0	1	0	0	0	0	5
South Carolina:									
Charleston	71,245	0	1	0	0	0	0	0	2
Columbia	39,688	0	0	0	0	2	1	9	4
Greenville	25,789	0	1	0	0	0	0	0	1
Georgia:									
Atlanta	222,963	2	2	6	17	7	0	0	13
Brunswick	15,937	0	0	0	25	0	0	0	0
Savannah	89,448	0	1	0	183	2	0	0	4
Florida:									
St. Petersburg	24,403	0	0	0	0	1	0	0	1
Tampa	56,050	0	2	0	4	0	0	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,87	1	1	0	0	0	0	0	5
Louisville	257,671	0	6	4	2	0	1	2	13
Tennessee:									
Memphis	170,067	...	5	1	0	0	4	...	14
Nashville	121,128	0	1	0	...	2	4	1	7
Alabama:									
Birmingham	195,901	5	2	5	14	8	0	5	15
Mobile	63,858	0	0	0	7	2	0	1	3
Montgomery	45,383	0	1	1	5	0	0	15	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	9	0	0	0	...	0	9	...
Little Rock	70,916	0	1	2	6	0	0	1	6
Louisiana:									
New Orleans	404,575	9	14	19	7	8	1	0	15
Shreveport	54,590	1	...	0	0	1	2	0	4
Oklahoma:									
Oklahoma	101,150	3	1	1	12	0	0	0	7
Tulsa	102,018	...	2	0	0	...	0	...	...
Texas:									
Dallas	177,274	16	6	10	...	5	4	0	11
Galveston	46,877	4	1	1	0	0	0	0	2
Houston	154,970	4	4	2	0	1	0	1	16
San Antonio	184,727	0	2	4	9	4	1	0	15
MOUNTAIN									
Montana:									
Billings	16,927	5	0	0	0	0	0	5	2
Great Falls	27,787	0	1	2	0	0	0	3	3
Helena	[1] 12,037	0	0	0	0	0	0	0	0
Missoula	[1] 12,668	...	0	0	0	0	80	...	1

[1] Population Jan. 1, 1920.

City reports for week ended February 7, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
MOUNTAIN—continued									
Idaho:									
Boise	22,806	2	1	0	0	0	0	0	0
Colorado:									
Denver	272,031	27	11	13		4	2	97	12
Pueblo	43,519	7	3	2		2	0	4	1
New Mexico:									
Albuquerque	16,648	7	1	0	0	0	0	0	0
Arizona.									
Phoenix	33,899	0		1	0	1	2	0	6
Utah:									
Salt Lake City	126,241	41	3	3	0	0	0	32	1
Nevada:									
Reno	12,429	0	0	0	0	0	0	1	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	91	5	12	0		8	75	
Spokane	104,573	16	4	14	0		0	0	
Tacoma	101,731	0	2	8	0	0	0	2	3
Oregon:									
Portland	273,621	19	7	8	0	0	0	4	6
California:									
Los Angeles	666,853	78	42	42	16	6	12	26	35
Sacramento	69,950	0	2	3	0	0	0	0	2
San Francisco	539,038	31	28	14	7	4	1	37	8

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	2	1	0	0	0	1	0	4	0	2	10
New Hampshire:											
Concord	1	4	0	0	0	0	0	0	0	0	12
Vermont:											
Barre	0	5	0	0	0	0	0	0	0	0	3
Burlington	1	1	0	0	0	0	0	0	0	0	12
Massachusetts.											
Boston	55	106	0	0	0	20	1	6	1	31	289
Fall River	3	4	0	0	0	1	0	1	0	3	25
Springfield	8	27	0	0	0	1	0	0	0	3	40
Worcester	11	9	0	0	0	0	0	0	1	5	55
Rhode Island:											
Pawtucket	1	2	0	0	0	0	0	0	0	0	15
Providence	8	12	0	0	0	6	0	0	0	2	89
Connecticut:											
Bridgeport	6	31	0	0	0	3	0	0	0	0	
Hartford	6	10	0	0	0	2	0	0	2	13	41
New Haven	7	36	0	0	0	1	0	1	0	1	41
MIDDLE ATLANTIC											
New York.											
Buffalo	21	20	0	0	0	5	1	1	2	18	122
New York	183	344	0	0	0	[2] 83	9	20	9	107	1,689
Rochester	11	40	0	0	0	4	1	1	3	1	80
Syracuse	18	5	0	0	0	2	1	0	0	5	56
New Jersey:											
Camden	2	13	0	3	1	1	1	0	0	2	36
Newark	23	37	0	0	0	7	1	1	0	68	92
Trenton	3	3	0	0	0	4	0	0	0		56
Pennsylvania:											
Philadelphia	60	199	0	0	0	39	3	3	0	64	584
Pittsburgh	21	73	0	0	0	8	0	0	1	12	234
Reading	1	4	0	0	0	0	1	0	0	12	37
Scranton	5	1	0	0	0	0	0	0	0	10	

[1] Population Jan. 1, 1920.

[2] Pulmonary tuberculosis only

City reports for week ended February 7, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	9	31	1	1	0	10	0	0	0	2	132
Cleveland	33	38	1	0	0	19	1	3	0	27	209
Columbus	8	25	1	3	0	7	0	1	1	1	79
Toledo	17	15	3	0	0	6	0	0	0	26	74
Indiana:											
Fort Wayne	3	7	0	0	0	0	0	0	0	7	24
Indianapolis	9	6	3	6	0	5	0	0	0	6	93
South Bend	2	8	1	1	0	0	0	0	0	0	11
Terre Haute	2	10	0	15	0	0	0	0	0	0	18
Illinois:											
Chicago	100	285	3	2	0	42	3	2	0	142	753
Cicero	1	4	0	0	0	0	0	0	0	7	8
Springfield	2	4	1	0	0	1	1	0	0	0	31
Michigan:											
Detroit	84	109	4	5	1	18	1	4	0	34	273
Flint	9	10	2	0	0	0	0	1	1	4	24
Grand Rapids	8	22	0	0	0	1	1	0	0	5	33
Wisconsin:											
Madison	3	1	1	0	0	1	0	0	0	6	14
Milwaukee	40	8	1	4	1	4	1	0	0	22	107
Racine	6	2	1	13	0	2	0	0	0	0	17
Superior	2	5	4	2	0	0	0	0	0	0	6
WEST NORTH CENTRAL											
Minnesota:											
Duluth	4	17	1	0	0	0	0	0	0	0	31
Minneapolis	32	69	8	24	13	4	1	0	1	2	93
St. Paul	28	21	8	1	0	1	0	0	0	27	60
Iowa:											
Davenport	3	6	2	3	------	------	0	0	------	2	------
Des Moines	9	5	3	2	------	------	0	0	------	0	------
Sioux City	2	0	1	0	------	------	0	0	------	0	------
Waterloo	8	1	0	5	------	------	0	0	------	4	------
Missouri:											
Kansas City	13	180	2	2	0	3	0	0	0	2	97
St. Joseph	3	4	1	0	0	2	0	0	0	0	31
St. Louis	28	115	1	11	0	5	1	0	1	2	247
North Dakota:											
Fargo	1	------	0	------	------	------	0	------	------	------	------
Grand Forks	1	1	1	0	------	------	0	0	------	0	------
South Dakota:											
Aberdeen	------	0	------	0	------	------	------	0	------	1	------
Sioux Falls	2	1	1	0	0	0	0	0	0	0	6
Nebraska:											
Lincoln	3	1	1	1	0	0	0	0	0	0	19
Omaha	6	5	2	27	0	4	0	0	0	1	77
Kansas:											
Topeka	2	1	0	0	0	0	0	0	0	0	14
Wichita	3	2	1	0	0	2	0	0	0	11	40
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	------	0	------	------	------	0	------	------	------	------
Maryland:											
Baltimore	38	66	0	0	0	24	2	3	0	67	255
Cumberland	1	0	0	0	0	1	0	0	0	------	14
Frederick	2	1	0	0	0	0	0	0	0	------	5
District of Columbia:											
Washington	20	34	1	4	0	11	1	1	1	7	143
Virginia:											
Lynchburg	1	1	0	0	0	0	0	0	0	5	12
Norfolk	1	3	0	0	0	2	0	0	0	11	------
Richmond	4	4	0	0	0	2	0	0	0	1	68
Roanoke	1	3	0	0	0	1	0	0	0	0	10
West Virginia:											
Charleston	1	0	0	4	0	1	0	0	0	0	18
Huntington	1	1	0	1	------	------	0	0	------	0	------
Wheeling	1	1	0	0	0	3	1	1	1	1	26
North Carolina:											
Raleigh	1	1	0	4	0	0	0	0	0	3	7
Wilmington	0	0	0	4	0	0	0	0	0	6	15
Winston-Salem	2	0	0	10	0	4	0	0	0	4	30

City reports for week ended February 7, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
SOUTH ATLANTIC—continued											
South Carolina:											
Charleston	1	0	0	0	0	1	1	1	0	0	18
Columbia	0	0	0	0	0	2	0	0	0	5	22
Greenville	0	0	1	0	0	0	0	0	0	0	4
Georgia:											
Atlanta	3	5	2	3	0	3	0	0	0	0	69
Brunswick	0	0	0	0	0	0	0	0	0	0	4
Savannah	1	0	0	0	0	2	0	1	1	5	26
Florida:											
St. Petersburg	0	0	1	0	0	1	0	0	0	0	23
Tampa	1	1	0	0	0	1	1	1	0	2	19
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	0	0	0	0	0	0	0	0	1	14
Louisville	4	5	0	0	0	2	0	0	1	17	78
Tennessee:											
Memphis	2	6	2	5	0	5	0	1	0	------	68
Nashville	2	1	1	8	0	4	1	1	0	0	44
Alabama:											
Birmingham	2	3	0	130	0	8	1	0	0	0	71
Mobile	0	0	0	0	0	1	0	0	0	0	23
Montgomery	0	2	0	1	0	0	0	0	0	0	16
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	12	1	3	------	------	0	0	------	1	------
Little Rock	1	1	0	0	0	4	1	1	0	------	------
Louisiana:											
New Orleans	4	14	3	1	0	17	2	4	0	5	165
Shreveport	------	0	------	4	0	2	------	0	0	0	28
Oklahoma:											
Oklahoma	2	3	4	0	0	2	0	0	0	0	29
Tulsa	1	2	1	0	------	------	0	0	------	------	------
Texas:											
Dallas	2	3	2	2	0	2	0	0	0	4	61
Galveston	1	0	1	7	0	1	1	0	0	0	22
Houston	1	4	0	10	2	0	0	0	1	0	55
San Antonio	0	1	0	0	0	11	1	0	0	0	62
MOUNTAIN											
Montana.											
Billings	1	0	0	0	0	0	0	0	0	14	7
Great Falls	1	3	2	0	0	0	0	0	0	0	7
Helena	0	0	0	0	0	0	0	0	0	0	3
Missoula	0	4	0	1	0	1	0	0	0	------	12
Idaho:											
Boise	1	3	0	2	0	0	0	1	0	0	0
Colorado:											
Denver	12	19	3	0	0	12	0	0	0	1	76
Pueblo	2	1	0	0	0	0	0	2	0	0	13
New Mexico:											
Albuquerque	2	0	0	0	0	1	0	0	0	0	4
Arizona:											
Phoenix	------	2	------	0	0	13	------	0	0	0	28
Utah:											
Salt Lake City	4	2	3	0	0	2	0	0	0	2	25
Nevada:											
Reno	0	3	0	0	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle	10	38	2	31	------	------	0	1	------	11	------
Spokane	4	2	7	3	------	------	0	0	------	8	------
Tacoma	3	4	3	1	0	0	0	2	0	0	21
Oregon:											
Portland	5	10	5	16	0	4	0	1	0	1	------
California:											
Los Angeles	16	34	2	37	1	31	2	1	0	25	262
Sacramento	1	0	0	1	0	1	0	1	0	1	23
San Francisco	18	16	2	19	0	12	1	1	0	14	146

City reports for week ended February 7, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, est. expectancy	Cases	Deaths	Cases	Deaths
NEW ENGLAND											
Massachusetts:											
Boston	0	0	2	0	0	0	1	0	0	0	0
Springfield	0	0	0	1	0	0	0	0	0	0	0
Rhode Island:											
Providence	0	0	0	1	0	0	0	0	0	0	0
Connecticut:											
Bridgeport	0	0	1	0	0	0	0	0	0	0	0
New Haven	1	0	0	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC											
New York:											
Buffalo	0	1	0	0	0	0	0	0	0	0	0
New York	2	0	5	2	0	0	1	1	0	1	0
Syracuse	0	0	1	1	0	0	0	0	0	0	0
EAST NORTH CENTRAL											
Ohio:											
Columbus	1	0	0	0	0	0	0	0	0	0	0
Illinois:											
Chicago	1	0	2	1	0	0	1	0	0	0	0
Michigan:											
Detroit	2	0	2	0	0	0	0	0	0	0	0
Flint	0	1	0	0	0	0	0	0	0	0	0
Wisconsin:											
Madison	0	0	0	0	0	0	0	1	0	0	0
Milwaukee	0	0	0	0	0	0	0	1	0	0	0
WEST NORTH CENTRAL											
Missouri:											
St. Louis	1	0	0	0	0	0	0	0	0	0	0
SOUTH ATLANTIC											
Maryland:											
Baltimore	0	0	1	1	0	0	0	0	0	1	0
Virginia:											
Norfolk	1	0	0	0	0	0	0	0	0	0	0
West Virginia.											
Wheeling	1	1	0	0	0	0	0	0	0	0	0
EAST SOUTH CENTRAL											
Alabama:											
Mobile	0	0	0	0	0	1	0	0	0	0	0
WEST SOUTH CENTRAL											
Arkansas:											
Little Rock	0	1	0	0	0	0	0	0	0	0	0
Louisiana:											
New Orleans	0	0	0	0	0	0	0	1	0	0	0
Texas:											
Dallas	0	0	0	0	0	1	0	0	0	0	0
MOUNTAIN											
Colorado:											
Denver	0	0	0	2	0	0	0	0	0	0	0
Pueblo	3	1	0	0	0	0	0	0	0	0	0
Nevada:											
Reno	0	0	0	0	0	0	0	1	1	0	0
PACIFIC											
Oregon:											
Portland	0	0	1	0	0	0	0	0	0	0	0
California:											
Los Angeles	1	0	0	0	0	0	0	0	0	0	0
San Francisco	1	0	1	0	0	0	0	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended February 7, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, November 30, 1924, to February 7, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7
Total	[2] 190	[3] 193	[4] 197	150	[4] 155	169	[5] 172	[5] 163	[6] 166	[7] 175
New England	258	[3] 208	221	180	258	256	179	171	190	191
Middle Atlantic	170	175	187	149	140	181	188	175	155	171
East North Central	165	167	185	134	151	132	141	130	[6] 135	145
West North Central	309	265	299	168	176	143	255	199	251	[8] 251
South Atlantic	[9] 173	201	150	134	146	173	[5] 106	[5] 138	128	[5] 153
East South Central	[10] 98	97	149	51	91	120	91	80	97	69
West South Central	144	209	195	116	148	144	195	162	148	176
Mountain	172	315	248	209	191	239	153	239	134	191
Pacific	252	273	[4] 207	226	[4] 129	194	206	223	293	270

MEASLES CASE RATES

	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7
Total	[2] 112	[3] 128	[4] 143	105	[4] 158	215	[5] 141	[5] 213	[6] 214	[7] 253
New England	164	[3] 282	194	278	380	395	440	497	484	576
Middle Atlantic	105	120	115	235	121	169	157	187	206	205
East North Central	199	207	317	138	294	417	127	379	[6] 373	453
West North Central	25	35	19	10	10	19	12	27	21	[8] 17
South Atlantic	[9] 22	39	24	35	53	83	[5] 43	[5] 38	37	[5] 49
East South Central	[10] 0	6	11	0	17	29	46	74	91	51
West South Central	0	0	19	14	9	5	23	14	14	37
Mountain	19	48	57	19	115	134	267	248	286	782
Pacific	136	125	[4] 37	70	[4] 83	194	160	55	17	61

SCARLET FEVER CASE RATES

	Dec. 6	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7
Total	[2] 270	[3] 312	[4] 314	244	[4] 297	369	[5] 355	[5] 370	[6] 364	[7] 412
New England	544	[3] 602	552	512	609	661	561	596	534	614
Middle Atlantic	197	260	268	225	286	324	294	326	322	372
East North Central	257	234	311	230	243	383	375	369	[6] 370	426
West North Central	616	626	601	468	527	757	755	804	779	[8] 873
South Atlantic	[9] 171	252	213	132	203	160	[5] 243	[5] 189	185	[5] 255
East South Central	[10] 162	109	240	126	172	229	183	183	217	97
West South Central	125	162	185	65	83	148	116	195	204	162
Mountain	296	162	239	191	162	382	534	305	258	334
Pacific	197	218	[4] 134	133	[4] 138	189	183	220	226	258

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Norfolk, Va., and Memphis, Tenn., not included in calculating the rate. Reports not received at time of going to press.
[3] Worcester, Mass., not included.
[4] Los Angeles, Calif., not included.
[5] Wilmington, Del., not included.
[6] Racine, Wis., not included.
[7] Fargo, N. Dak., and Wilmington, Del., not included.
[8] Fargo, N. Dak., not included.
[9] Norfolk, Va., not included.
[10] Memphis, Tenn., not included.

Summary of weekly reports from cities, November 30, 1924, to February 7, 1925—Annual rates per 100,000 population [1]—Continued

SMALLPOX CASE RATES

Total	[2] 58	[3] 43	[4] 42	41	[4] 40	57	[5] 58	[5] 70	[6] 67	[7] 76
New England	0	[3] 0	0	0	0	0	0	0	0	0
Middle Atlantic	5	1	2	2	3	3	10	6	9	2
East North Central	10	13	14	20	27	40	39	48	[6] 35	39
West North Central	417	255	209	205	129	220	193	180	195	[8] 147
South Atlantic	[9] 48	39	22	28	39	30	[5] 64	[5] 88	45	[5] 62
East South Central	[10] 204	177	314	183	372	395	217	675	652	828
West South Central	19	14	51	19	32	65	32	32	60	125
Mountain	19	19	29	48	48	29	57	95	48	29
Pacific	113	113	[4] 106	122	[4] 69	148	212	209	177	267

TYPHOID FEVER CASE RATES

Total	[2] 45	[3] 43	[4] 56	35	[4] 37	36	[5] 21	[5] 17	[6] 18	[7] 13
New England	30	[3] 16	30	17	25	15	25	20	7	30
Middle Atlantic	71	68	101	57	58	49	21	20	19	13
East North Central	22	32	33	24	28	23	23	11	[6] 10	8
West North Central	8	17	15	19	4	6	10	6	12	[8] 0
South Atlantic	[9] 56	35	30	37	41	55	[5] 21	[5] 11	37	[5] 17
East South Central	[10] 63	57	51	34	40	51	17	29	23	11
West South Central	60	51	56	28	37	70	70	42	60	23
Mountain	10	19	10	0	0	10	0	48	19	29
Pacific	29	17	[4] 14	15	[4] 5	26	6	15	3	17

INFLUENZA DEATH RATES

Total	[2] 12	[3] 17	[4] 16	15	19	21	[5] 22	[5] 22	[6] 23	[7] 30
New England	17	[3] 5	15	15	3	17	27	10	27	47
Middle Atlantic	11	22	17	14	21	20	18	20	16	24
East North Central	9	13	9	16	10	16	15	18	[6] 12	13
West North Central	4	4	9	7	9	13	2	20	15	[8] 20
South Atlantic	[9] 11	22	22	14	26	35	[5] 47	[5] 23	39	[5] 49
East South Central	[10] 28	23	23	51	63	46	46	63	74	69
West South Central	31	36	41	15	51	41	87	92	82	97
Mountain	29	29	48	10	38	19	29	10	38	57
Pacific	8	4	[4] 17	12	12	20	12	12	20	41

PNEUMONIA DEATH RATES

Total	[2] 153	[3] 159	[4] 172	157	203	192	[5] 215	[5] 211	[6] 206	[7] 225
New England	127	[3] 109	134	114	174	122	157	216	241	211
Middle Atlantic	188	201	191	178	226	228	260	234	230	253
East North Central	115	125	146	126	165	152	152	142	[6] 145	164
West North Central	63	88	68	92	101	90	107	120	118	[8] 135
South Atlantic	[9] 191	175	248	205	250	246	[5] 294	[5] 275	252	[5] 315
East South Central	[10] 211	217	297	206	303	292	189	320	303	326
West South Central	163	178	163	229	341	260	449	362	229	352
Mountain	210	200	276	219	229	229	248	324	315	191
Pacific	168	135	[4] 86	147	188	184	163	208	217	196

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Norfolk, Va., and Memphis, Tenn., not included in calculating the rate. Reports not received at time of going to press.
[3] Worcester, Mass., not included.
[4] Los Angeles, Calif., not included.
[5] Wilmington, Del., not included.
[6] Racine, Wis., not included.
[7] Fargo, N. Dak., and Wilmington, Del., not included.
[8] Fargo, N. Dak., not included.
[9] Norfolk, Va., not included.
[10] Memphis, Tenn., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

SMALLPOX ON VESSEL

Steamship "Habana" at Santiago de Cuba, from Kingston, Jamaica.—A case of smallpox was reported, February 18, 1925, at Santiago de Cuba, from steamship *Habana*, from Kingston, Jamaica. The *Habana* is stated to be a Cuban vessel trading to ports in Haiti and Porto Rico.

CUBA

Communicable diseases—Habana—January 1 to 31, 1925.—During the period January 1 to 31, 1925, communicable diseases were reported at Habana, Cuba, as follows:

Disease	Cases	Deaths	Remaining under treatment Jan. 31, 1925
Chicken pox	5		4
Diphtheria	17	1	2
Leprosy			9
Malaria	65	3	[1] 24
Measles	30		6
Scarlet fever	3		
Typhoid fever	36	7	[1] 26

[1] A number of cases of malaria and typhoid fever were from the interior of the island; five cases of measles were from abroad.

EGYPT

Plague—January 1 to 14, 1925.—During the period January 1 to 14, 1925, plague was reported in Egypt as follows: Week ended January 7, 11 cases; week ended January 14, 2 cases; total, 13 cases, as compared with 8 cases reported during the corresponding period of the preceding year.

JAMAICA

Smallpox (reported as alastrim)—December 28, 1924—January 31, 1925.—During the period December 28, 1924, to January 31, 1925, 60 cases of smallpox, reported as alastrim, were notified in the Island of Jamaica.

Lethargic encephalitis—Typhoid fever.—During the same period, 1 case of lethargic encephalitis and 94 cases of typhoid fever were reported in the Island of Jamaica. Population, 858,118.

MADAGASCAR

Plague—December 1 to 15, 1924.—During the period December 1 to 15, 1924, 72 cases of plague with 61 deaths were reported in the Island of Madagascar. Of these, 7 cases, bubonic, with 3 deaths,

were reported in the town of Fort Dauphin, a seaport. For distribution of occurrence according to Province, see table below.

TURKEY

Pneumonic plague—Constantinople.—Information dated January 31, 1925, states that at Constantinople, Turkey, during the period December 29, 1924, to January 11, 1925, there occurred five cases of pneumonic plague, in the same family and in the same house. The outbreak was stated to be confined to a section in which Turkish refugees were quartered.

UNION OF SOUTH AFRICA

Plague—Dec. 28, 1924–Jan. 3, 1925.—During the period December 28, 1924, to January 3, 1925, plague was reported in the Union of South Africa as follows: Cape Province, 3 cases, one death, native, on farm; Orange Free State, 3 fatal cases, native, 1 white case, on farms; Transvaal, 1 fatal case, white on farm. The death of a white adult, suspected to be due to pneumonic plague, in Boshof district, Transvaal, was stated to be under investigation. For distribution of cases according to localities, see page 439.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended February 27, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Dec. 7-13, 1924 Cases, 2,577; deaths, 1,593.
Madras	Jan. 11-17	23	16	

PLAGUE

Place	Date	Cases	Deaths	Remarks
British East Africa:				
Kenya—				
Tanganyika Territory	Nov 23-29	3		
Uganda	Sept.-Oct., 1924	101	91	
Ceylon:				
Colombo	Dec. 28-Jan. 3	1	1	
Do	Jan. 4-10	1	3	
China:				
Nanking	Jan. 4-17			Present.
Egypt				Jan. 1-14, 1925: Cases, 13; corresponding period, 1923; cases, 8.
India				Dec 7-13, 1924. Cases, 2,684; deaths, 2,045.
Bombay	Dec. 28-Jan. 3	1	1	
Karachi	Jan. 11-17	7	4	
Madras Presidency	Dec. 14-20	185	138	
Rangoon	Dec. 28-Jan. 3	5	5	
Madagascar				Dec. 1-15, 1924: Cases, 72; deaths, 61. Bubonic, pneumonic, septicemic.
Province—				
Itasy	Dec. 1-15	1	1	Septicemic.
Moramanga	do	15	9	
Tananarive	do	49	48	
Town—				
Fort Dauphin	do	7	3	Bubonic. Seaport.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended February 27, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Mauritius Island	Sept. 7-Oct. 18	60	53	
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Turkey:				
Constantinople	Jan 9-15	5	5	Pneumonic; occurring among Turkish refugees in one family.
Union of South Africa:				
Cape Province—				
De Aar District	Dec. 28-Jan. 3	3	1	Native. On farm.
Orange Free State—				
Bloemfontein District	do	2	1	One case, fatal, in native; one white case, Brandfort area. On farms.
Ficksburg District	do	1	1	Native. On farm.
Kroonstad District	do	1	1	Bothaville area
Transvaal—				
Boshof District	do	1	1	White On farm.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 372.
Brazil:				
Pernambuco	Dec. 21-27	15	4	
Do	Dec. 28-Jan 3	12	7	
British East Africa:				
Kenya—				
Entebbe (Uganda)	Oct. 1-31	4		
Canada				
British Columbia—				
Vancouver	Feb 1-7	21		
Victoria	do	1		
Manitoba—				
Winnipeg	Feb. 8-14	6		
China:				
Antung	Jan. 5-18	4		
Foochow	Dec 14-20			Present.
Nanking	Jan. 4-17			Present.
Great Britain:				
England and Wales				Jan. 18-24, 1925. Cases, 147.
Newcastle on-Tyne	Jan. 18-24	2		
India				Dec. 7-13, 1925. Cases, 1,450; deaths, 312.
Bombay	Dec. 28-Jan. 3	4	1	
Karachi	Jan 11-17	4	2	
Madras	do		7	
Rangoon	Dec 28-Jan. 3	15	8	
Indo-China				
Saigon	Dec 14-27	8	3	Including 100 square kilometers of surrounding territory.
Jamaica				Dec 28, 1924-Jan 31, 1925. Cases, 60 (reported as alastrim).
Java.				
East Java—				
Soerabaya	Dec 11-20	20	15	
West Java—				
Batavia	Dec 27-Jan. 2	9	3	
Mexico:				
Mexico City	Jan. 25-31	1		Including municipalities in Federal district.
Vera Cruz	Jan. 26-Feb. 1		6	
Poland				Nov 23-29, 1924. Cases, 5.
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Spain:				
Malaga	Jan. 25-31		15	
Syria:				
Aleppo	Jan. 11-24	13	3	Estimated.
Damascus	Jan. 6-13	2		
Tunis				July 1-Dec. 20, 1924: Cases, 435.
Tunis	Jan. 29-Feb. 4	20	17	
Union of South Africa:				
Cape Province	Dec. 28-Jan. 3			Outbreaks.
On vessel:				
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended February 27, 1925—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 101; deaths, 14.
Mexico:				
Mexico City	Jan. 25-31	13		Including municipalities in Federal District.
Palestine:				
Jerusalem	Jan. 20-26	1		
Mikveh Israel	do	1		
Sweden:				
Goteborg	Jan. 18-24	1		
Turkey:				
Constantinople	Jan. 9-22	5		
Union of South Africa:				
Cape Province	Dec. 28-Jan. 3			Outbreaks.
Orange Free State	do			Do.

YELLOW FEVER

Gold Coast	Oct., 1924	3	3	

Reports Received from December 27, 1924, to February 20, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Nov. 29, 1924: Cases, 9; deaths, 8.
Colombo	Nov. 16-22	1		
India				Oct. 19-Dec. 6, 1924: Cases, 17,830; deaths, 10,750.
Bombay	Nov 23-Dec. 20	4	4	
Calcutta	Oct. 26-Dec. 26	54	46	
Madras	Nov. 16-Jan 3	69	40	
Do	Jan 4-10	31	18	
Rangoon	Nov 9-Dec. 20	9	2	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 14; deaths, 10.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept. 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov. 30-Dec. 6	1		
Siam:				
Bangkok	Nov. 9-29	4	2	

PLAGUE

Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 2-Jan. 3	30	13	
British East Africa:				
Kenya—				
Uganda	Aug. 1-31	79	62	
Canary Islands:				
Las Palmas				Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec. 26	3	1	Vicinity of Santa Cruz de Teneriffe.
Santa Cruz de Teneriffe	Jan. 3	1		In vicinity.
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-Dec. 27	11	8	
China:				
Nanking	Nov. 23-Jan. 3			Present.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to February 20, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Ecuador:				
Chimborazo Province—				
Alausi District	Jan. 14		14	At two localities on Guayaquil and Quito Railway.
Guayaquil	Nov. 16–Dec. 31	9	3	Rats taken, 27,004; found infected, 92.
Do	Jan. 1–15	6	4	Rats taken, 8,248; rats found infected, 28
Egypt				Dec. 25–31, 1924: Cases, 5. Jan. 1–Dec. 31, 1924: Cases, 373. Corresponding period, 1923: Cases, 1,519, Jan. 1–8, 1925: Cases, 11; deaths, 4.
Do	Jan. 1, 1924–Jan 1, 1925.	377	194	
City—				
Alexandria	do	2	2	First case, Apr 2; last case, Nov 26.
Ismailia	do	1	1	July 6–July 6.
Port Said	do	6	4	Apr. 24–Dec. 7.
Suez	do	20	13	Jan. 2–Dec. 20.
Province—				
Assiout	do	44	35	Apr 1–Aug. 27.
Behera	do	1	1	Aug. 9
Beni-Souef	do	4	4	June 21–Dec. 25.
Charkieh	do	1	1	Jan. 31.
Dakhalia	do	1	1	Oct 1.
Do	Jan. 1–8, 1925	1	1	
Fayoum	Jan 1, 1924–Jan. 1, 1925	106	33	Feb. 18–July 18.
Gharbia	do	6	2	Apr. 21–Sept 2
Ghirga	do	10	3	Jan. 17–May 13.
Kalioubiah	do	14	4	Jan. 6–Dec. 31.
Do	Jan. 1–8, 1925	8		
Kena	Jan. 1, 1924–Jan. 1, 1925	45	26	Apr. 9–Nov. 15
Menoufieh	do	58	36	Jan. 2–June 28
Do	Jan. 1–8, 1925	7	3	
Minia	Jan. 1, 1924–Jan. 1, 1925.	58	28	Feb. 5–Aug. 1.
Gold Coast				Sept.–Oct., 1924: Cases, 41; deaths, 42.
Hawaii				
Honokaa	Nov 4	1		At Mill Camp, location of Honokaa Sugar Co. Plague-infected rodent found, Dec. 9, 1924, in vicinity of Honokaa village. Jan. 15, 1925. Plague-infected rat trapped near Pacific Sugar Mill Co.'s location.
India				Oct. 19–Dec. 6, 1924: Cases, 17,096; deaths, 12,897.
Bombay	Nov. 22–Dec. 20	3	2	
Karachi	Nov. 30–Dec. 6	2	1	
Do	Jan 4–10	1	1	
Madras Presidency	Nov. 23–Dec. 6	182	128	
Do	Dec. 14–20	161	113	
Rangoon	Oct. 26–Dec. 27	21	20	
Indo-China				Aug. 1–Sept. 30, 1924. Cases, 25; deaths, 20.
Province—				
Anam	Aug. 1–Sept. 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Japan	Aug. 10–Nov. 15	12		
Java:				
East Java—				
Blitar	Nov. 11–22			Province of Kediri epidemic.
Pare	Nov. 29			Do.
Soerabaya	Nov. 16–Dec. 13	53	55	
West Java—				
Cheribon	Oct. 14–Nov. 3		14	
Do	Nov 18–24		13	
Pakalongan	Oct. 14–Nov. 3		29	
Do	Nov. 18–24		13	
Tegal	Oct. 14–Nov. 24		10	
Madagascar				Nov 1–30, 1924: Cases, 182; deaths, 157.
Provinces—				
Itasy	Nov. 1–30	3	1	
Moramanga	do	34	25	
Tananarive	Oct. 16–Nov. 30	174	160	Tananarive City (interior), Oct. 16–Nov. 30: Cases, 8; deaths, 7.
Towns (ports)—				
Fort Dauphin	Nov. 1–30	5	2	
Majunga	do	1	1	
Tamatave	do	1	1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to February 20, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Nigeria				Aug.-Oct., 1924: Cases, 309; deaths, 256.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Union of South Africa:				
Cape Province—				
De Aar	Nov 22-29	1		Native.
Dronfield	Dec 7 13	1		8 miles from Kimberley.
Kimberley	Dec 7-27	3	2	
Maraisburg District	Nov 22-Dec 13	4	2	Bubonic, on Goedshoop Farm.
Orange Free State—				
Bloemfontein District	Dec 21-27	1	1	
Brandfort Area	do	2		
Hoopstad	Dec. 7-13	1		On farm.
Kroonstad	Nov 22-29	1		Bubonic, mild; from Grandstable Farm, Hoopstad district
Philippolis District	Dec. 21-27	1		
Vredefort	Dec 7-20	2	2	On farms.
Transvaal—				
Boshof	do	2	2	On farm
Wolmaransstad District.	Nov. 22 29	1	1	On Farm Wolverspruit, Vaal River Native.
On vessel				
S. S. Conde				At Marseille, France, Nov 6, 1924 Plague rat found Vessel left for Tamatave, Madagascar, Nov 12, 1924
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Bolivia:				
La Paz	Nov. 1-Dec 31	20	11	
Brazil:				
Pernambuco	Nov. 9-Dec 20	73	16	
British South Africa				
Northern Rhodesia	Oct 28 Dec 15	57	2	
Canada:				
British Columbia—				
Vancouver	Dec 14-Jan 3	32		
Do	Jan. 4-31	90		
Victoria	Jan 18 24	1		
Manitoba—				
Winnipeg	Dec 7-Jan. 3	14		
Do	Jan 4-Feb. 7	23		
New Brunswick—				
Bonaventure and Gaspe Counties.	Jan. 1-31	1		
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33. Dec 28, 1924, to Jan. 31, 1925: Cases, 27
Hamilton	Jan. 24-30	1		
Ceylon				July 27-Nov. 29, 1924: Cases, 27; deaths, 1.
China.				
Amoy	Nov. 9-Jan. 3			Present.
Antung	Nov. 17-Dec. 28	5		
Foochow	Nov. 2-Dec. 27			Do.
Hongkong	Nov. 9-Dec. 6	5	1	
Shanghai	Dec. 7-27	1	2	
Czechoslovakia				Apr.-June, 1924: Case, 1; occurring in Province of Moravia.
Ecuador:				
Guayaquil	Nov. 16-Dec 15	4		
Egypt.				
Alexandria	Nov. 12-Dec. 31	10		
France				July-Nov., 1924: Cases, 69.
Germany				June 29-Nov. 8, 1924: Cases, 7.
Gibraltar	Dec. 8-14	1		
Gold Coast				July-Sept., 1924: Cases, 82; deaths, 1.
Great Britain:				
England and Wales	Nov. 23-Jan 3	472		
Do	Jan. 4-17	204		
Greece				Jan.-June, 1924: Cases, 170; deaths, 27.
Do				July-Nov., 1924: Cases, 36; deaths, 26.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to February 20, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
India				Oct 19-Dec. 6, 1924: Cases, 6,422; deaths, 1,433.
Bombay	Nov. 2-Dec. 27	26	17	
Calcutta	Oct 26-Dec. 20	194	106	
Karachi	Nov. 16-Jan. 3	16	2	
Do	Jan. 4-10	9		
Madras	Nov. 16-Jan 3	122	48	
Do	Jan. 4-10	28	8	
Rangoon	Oct. 26-Dec. 27	71	20	
Indo-China				Aug 1-Sept 30, 1924 Cases, 223; deaths, 76.
Province—				
Anam	Aug. 1-Sept. 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov. 16-29	3	2	Including 100 sq. km. of surrounding country.
Tonkin	Aug. 1-Sept 30	19	7	
Iraq:				
Bagdad	Nov. 9-15	1	1	
Italy				June 29-Dec 6, 1924: Cases, 61.
Jamaica				Nov. 30-Dec 27, 1924: Cases, 33. Reported as alastrim.
Kingston	Nov. 30-Dec 27	4		Reported as alastrim.
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Java:				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov 12-19			Epidemic in two native villages.
Soerabaya	Oct. 19 Dec 23	593	182	
West Java—				
Batam	Oct 14 20	2		
Batavia	Oct 21-Nov. 14	2		
Do	Dec. 20-26	10	1	
Cheribon	Oct 14-Nov. 24	15		
Pekalongan	do	22		
Preanger	Nov 18-24	1		
Latvia				Oct 1-Nov. 30, 1924: Cases, 5.
Mexico:				
Durango	Dec 1-31		5	
Do	Jan. 1-31		5	Town and district.
Guadalajara	Dec. 29-29		1	
Do	Jan 6-12		1	
Mexico City	Nov 23-Dec 27	5		
Do	Jan. 11-24	4		
Monterey				Jan. 24, 1925. Outbreak.
Salina Cruz	Dec 1-31	1	1	
Tampico	Dec 11-31	5	4	
Do	Jan 1-31	17	6	
Vera Cruz	Dec. 1 Jan. 3		10	
Do	Jan. 5-25		12	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Nigeria				Jan-June, 1924: Cases, 357; deaths, 87.
Do				July-Oct., 1924: Cases, 10; deaths, 2.
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept. 21-Nov. 22, 1924: Cases, 14; deaths, 2.
Portugal:				
Lisbon	Dec. 7-Jan. 3	17		
Do	Jan. 4-17	26		
Oporto	Nov. 30-Dec 27	3	2	
Do	Jan. 11-17	1		
Russia				Jan.-June, 1924: Cases, 9,683. July-Sept., 1924: Cases, 1,261.
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Cadiz	Nov. 1-Dec. 31		51	
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-24		36	
Valencia	Nov. 30-Dec. 6	2		
Switzerland:				
Lucerne	Nov. 1-Dec. 31	10		
Syria:				
Aleppo	Nov. 28-Dec. 27	13		
Do	Jan. 4-10	12	3	
Tunis:				
Tunis	Nov. 25-Dec. 29	42	35	
Do	Jan. 1-14		29	
Do	Jan. 22-28		15	
Turkey:				
Constantinople	Dec. 13-19	5		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924 to February 20, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa				Nov. 1-30, 1924: Cases, 7.
Cape Province	Nov. 9-29			Outbreaks.
Orange Free State	Nov. 2-8			Do.
Transvaal	Nov. 9 Dec. 20			Do.
Uruguay				Jan.-June, 1924: Cases, 101; deaths, 2.
Do				July, 1924: Cases, 25; deaths, 3.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Nov 1 Dec. 31	5	1	
Bolivia				
La Paz	do	3		
Bulgaria				Jan June, 1924: Cases, 191; deaths, 28.
Do				July-Oct., 1924 Cases, 5.
Chile:				
Concepcion	Nov 25-Dec. 1		1	
Iquique	Nov. 30-Dec 1		2	
Talcahuano	Nov 16-Dec 20		5	
Do	Jan 4 10		1	
Valparaiso	Nov 25-Dec. 7		4	
Do	Jan. 11-17		2	
Chosen				
Seoul	Nov 1 30	1	1	
Egypt				
Alexandria	Dec 3-9	1	1	
Cairo	Oct 1 Nov 18	10	7	
France				July-Oct, 1924 Cases, 7.
Gold Coast				Oct 1 31, 1924 1 case.
Greece				May-June, 1924. Cases, 116; deaths, 8
Do				July-Nov, 1924 Cases, 35; deaths, 4.
Japan				Aug 1-Nov 15, 1924 Cases, 2.
Latvia				Oct Nov., 1924 Cases, 16.
Lithuania				Aug Oct, 1924. Cases, 15; deaths, 1.
Mexico				
Durango	Dec 1 31		1	
Guadalajara	Dec 23 29		1	
Mexico City	Nov 9-Jan 3	80		Including municipalities in Federal district.
Do	Jan 11-24	16		
Palestine				Nov. 12-Dec 8, 1924: Cases, 7.
Ekron	Dec. 23 29	1		
Jerusalem	do	2		
Peru:				
Arequipa	Nov. 24 30		1	
Poland				Sept 28-Nov 15, 1924. Cases, 232; deaths, 17.
Portugal:				
Lisbon	Dec 29-Jan. 4		2	
Oporto	Jan 4-10	1		
Rumania				Jan-June, 1924. Cases, 2,906; deaths, 328.
Do				July Aug, 1924 Cases, 89; deaths, 12.
Constanza	Dec 1-10	1		
Russia				Jan 1-June 30, 1924: Cases, 92,000. July-Sept., 1924: Cases, 5,225.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Turkey.				
Constantinople	Nov. 15-Dec. 19	6	1	
Do	Jan. 2-8	1		
Union of South Africa:				
Cape Province	Nov. 1-30	89	16	Dec. 21-27, 1924: Outbreaks.
Natal	do	105	45	Dec. 14-20, 1924: Outbreaks.
East London	Nov. 16-22	1		
Orange Free State	Nov. 1-30	21	2	Dec. 7-13, 1924: Outbreaks.
Transvaal	do	18	3	
Yugoslavia				Aug. 3-Oct. 18, 1924: Cases, 17; deaths, 2.
Belgrade	Nov 24-Dec. 7	4		

TREASURY DEPARTMENT

PUBLIC HEALTH REPORTS

ISSUED WEEKLY

BY THE UNITED STATES PUBLIC HEALTH SERVICE

VOLUME 40 :: :: NUMBER 10

MARCH 6 - - - 1925

SPECIAL ARTICLES

Reports of the Health Section of the League of Nations
Rat-Extermination Measures Employed at Liverpool

WASHINGTON
GOVERNMENT PRINTING OFFICE
1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of the public health.

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PUBLIC HEALTH REPORTS

VOL. 40 MARCH 6, 1925 No. 10

CURRENT WORLD PREVALENCE OF DISEASE

REVIEW OF THE MONTHLY EPIDEMIOLOGICAL REPORT FOR JANUARY 15, 1925, ISSUED BY THE HEALTH SECTION OF THE LEAGUE OF NATIONS' SECRETARIAT[1]

A favorable health situation existed throughout the world at the close of the year 1924, as indicated by the data made available in the January number of the Epidemiological Report, issued by the Health Section of the League of Nations' Secretariat at Geneva. An increasing prevalence of some diseases, particularly influenza, scarlet fever, and diphtheria, is noted in many countries, but these increases have not been excessive for the season and are not suggestive of serious epidemic conditions.

The mortality from all causes in a number of large cities scattered over the world showed the usual seasonal increase, but the rate has risen above that of 1923 only in a few instances. The Paris mortality for the period December 11–20 rose to 17.8 per 1,000 population, over 3 points higher than that for the previous decade or for the same decade a year ago. Similarly the death rates for Vienna and Danzig at the period of latest record (November 23–29) rose above the rate for the same date the previous year. Weekly rates, however, may fluctuate widely for a single city, and these sudden jumps are of little significance unless sustained for several weeks. There is no evidence of any widespread epidemic condition in either the mortality or morbidity reports.

The increase in the infant mortality in the English cities, mentioned last month, became more marked in December, when the rate for December 2–29 was 102 deaths under 1 year per 1,000 living births, compared with 82 the previous period and 90 in December, 1923. In Dublin, Belfast, and Glasgow also the infant mortality rose sharply in December to a level well above that of 1923. Most German cities and Vienna showed an increased infant mortality in November over October, but remained considerably below the 1923 level.

The special comments on the general prevalence of a number of the epidemic diseases given in the Monthly Report are summarized very briefly below:

[1] From the Statistical Office, United States Public Health Service.

Plague.—Some increase in plague incidence in India was reported in October and November, but the plague situation is much more favorable than in 1923, as is well indicated in the accompanying graph. The October-November rise is especially marked in Hyderabad State, while for the Bombay Presidency, the Punjab, and the Northwest-Frontier Provinces the situation was particularly favorable.

DEATHS (IN THOUSANDS) FROM PLAGUE IN INDIA, BY WEEKS, 1922-1924.

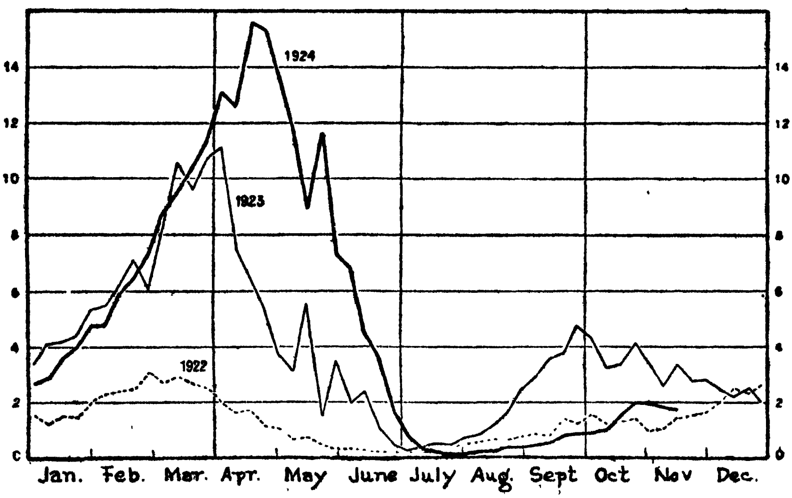


FIG. 1

In Java a fresh increase in the number of plague deaths was reported in November. Except for a few scattered cases, the cases are concentrated in the central provinces of the island.

Deaths from plague notified in Java

Two weeks ended—	Number of deaths	Two weeks ended—	Number of deaths
Sept. 8	414	Oct. 20	641
Sept. 22	584	Nov 3	732
Oct. 6	603	Nov. 17	863

An outbreak of 12 fatal cases of plague was reported in the Kalmuk Steppes, about 60 miles from Astrakhan, in the period November 23 to December 12.

A revival of plague cases is indicated in the Union of South Africa, in several localities, all of which are in or neighboring on the districts infected early in 1924. De Aar, a railway junction in the north of

Cape Colony, has reported most of the cases—20 cases from October 25 to the early part of December. All have been pneumonic except the first case, and 14 of the cases have been fatal.

Egypt continued to have only sporadic cases in December. The outbreak of plague in Lagos, Nigeria, declined in November, and only eight cases were reported during the last week. In Mauritius, plague was somewhat more prevalent in the fourth quarter of 1924 than in 1923.

Cholera.—The course of the cholera incidence in India, where the disease has been very prevalent in 1924, is shown in the accompanying chart. The incidence has declined markedly from the middle of September, especially in the Middle and Upper Ganges Valley, where the epidemic had been most severe, but the incidence continued above the 1923 level.

There were 294 cases of cholera with 120 deaths reported from Korea during the first half of 1924. Other Asiatic localities reporting

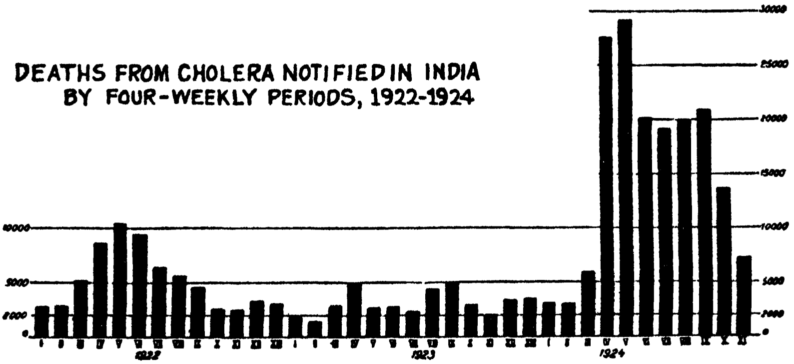


FIG. 2

cases in October or November, were Ceylon, French India, Indo-China, Siam, Shanghai, and the Philippine Islands.

Yellow fever.—The Gold Coast reported three fatal cases of yellow fever in October and one fatal case in November. From British Honduras it is reported that one case was found at Stann Creek, near Belize, on November 18.

Typhus and relapsing fever.—The Report states: "The data so far received show no evidence of a fresh increase in typhus in Eastern Europe; Finland, Esthonia, Germany, Austria, and Czechoslovakia remain quite free from infection, and Latvia, Lithuania, Hungary, Bulgaria, and the Kingdom of the Serbs, Croats, and Slovenes practically so."

In Poland, the autumn incidence is lower than in any recent year, 102 cases being reported for the four weeks ending November 22.

The number of cases of typhus and relapsing fever reported in Russia are the lowest on record for many years.

A rather serious outbreak of relapsing fever in the northern provinces of Nigeria is indicated.

Smallpox.—Europe continued free of any important epidemic of smallpox. In England, it is quite widely prevalent in a mild form, and a fresh increase was noted in the November reports, particularly in Derbyshire.

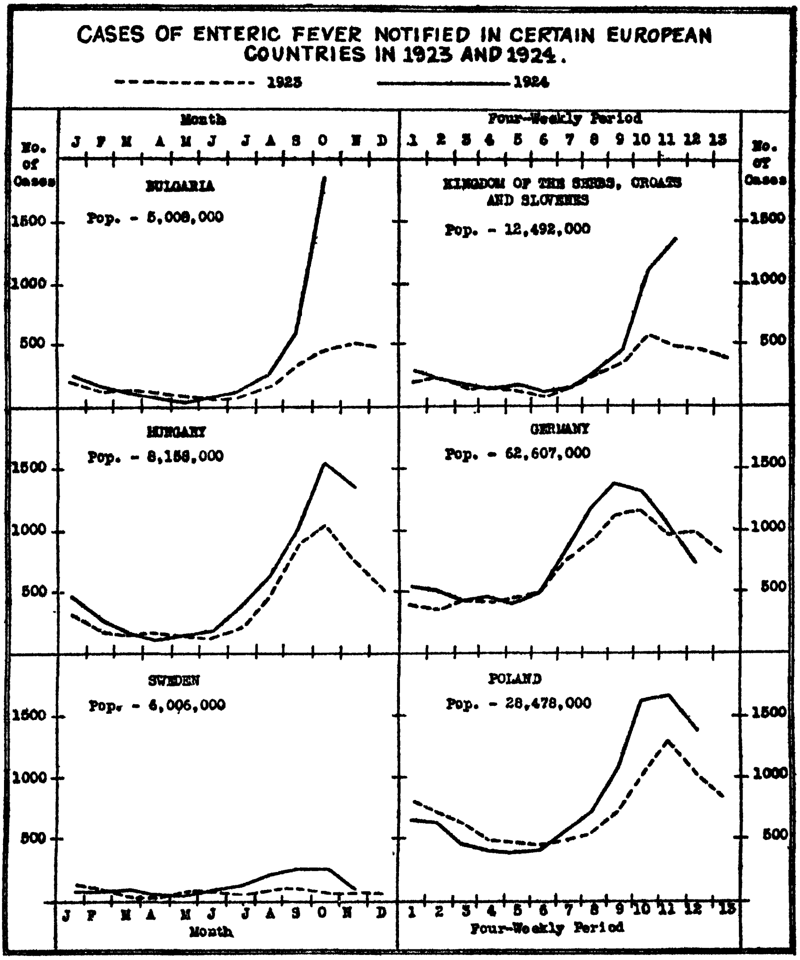


Fig. 3

Numerous cases of smallpox were reported in Algeria and Tunisia in November and December.

The smallpox incidence in India and the Far East was relatively low, at the dates of latest reports. Java, however, has shown a marked increase in the prevalence of the disease, 1,907 cases having been notified in the eight weeks ending October 4, as against 577 for the previous eight weeks ending July 12.

Since September, smallpox has been increasing in the United States, conforming closely to the seasonal fluctuation of 1923, but on a level somewhat above that of 1923. During November, the highest number of cases was reported from Minnesota, Alabama, and California. While the cases have been, in most instances, of a relatively mild type, a high fatality is indicated in recent reports for some localities.

Typhoid fever.—The comparatively high prevalence of typhoid fever in the greater part of Europe in 1924 was pointed out in last month's comment. In nearly all countries for which either November or December reports were available, a decline in the number of new cases being reported was shown. The graphs given in Figure 3 for some of the countries most affected by a high prevalence show the wide divergence between 1924 and 1923.

Dysentery.—Dysentery was less prevalent in the autumn of 1924 than in the previous autumn in central and most of southern Europe, while in eastern Europe, notably Poland and Russia, it has been more prevalent than in the previous year.

In Poland, two epidemic outbreaks are indicated, one which reached a maximum the end of August and a second and more severe outbreak which culminated in October. The following table compares the seasonal incidence of 1924 with that of 1923. The highest incidence occurred in eastern Galicia, but it has been high also in the Provinces of Cracow, Posnania, and Lodz.

Cases of dysentery reported in Poland, June–November, 1923 and 1924

Fortnight ending—	1923	1924
June 21	75	73
July 5	60	144
July 19	132	415
Aug. 2	392	730
Aug. 16	660	812
Aug. 30	685	1,339
Sept. 13	642	964
Sept. 27	689	724
Oct. 11	558	1,308
Oct. 25	357	1,837
Nov. 8	225	1,013
Nov. 22	204	386

For Russia the reports are not available later than September. The epidemic seems to have culminated in August and the Report states that "the whole country, including Murmansk and Arkhangelsk in the extreme north, has been affected. The epidemic seems to have been most intense in the northeast, where the Ural region, Viatka, the Bashkir Republic, and Nijni-Novgorod report large numbers of cases." The incidence in Siberia is stated also to be very high.

Cases of dysentery reported in European Russia (excluding the Ukraine)

Month	1923	1924
May	4,151	3,243
June	11,959	16,898
July	29,755	[1] 42,000
August	37,218	55,124
September	21,369	[2] 13,796

[1] Provisional. [2] Incomplete.

Influenza.—Although the December mortality figures indicate some increases in influenza in the English and German cities, and other localities reporting cases or deaths show a seasonal rise in the incidence of this disease, there was, at the time the Report went to press, no evidence of any serious epidemics of influenza. Since then, however, press dispatches state that a rather widespread epidemic of a mild type was prevalent in England in January and February.

Lethargic encephalitis.—Except for a continued high incidence of lethargic encephalitis in Great Britain (173 cases were notified in four weeks ending January 3, in England and Wales), the incidence of this disease in Europe and North America has been limited to sporadic cases.

An outbreak of lethargic encephalitis occurred in the Chuvash region of Russia in July and August. The number of cases reported for the whole of Russia was 60 in June, 252 in July, 130 in August, and 27 in September.

Acute poliomyelitis.—The few outbreaks of acute poliomyelitis which occurred in the autumn of 1924 were practically at an end in November.

Scarlet fever.—The late autumn reports of scarlet fever indicated that this disease was more prevalent than in 1923 in most countries of western, northern, and central Europe, but the increases do not exceed the usual year-to-year fluctuations. In the Danubian countries and the Balkans its incidence is far lower than in 1923, when serious epidemics occurred there.

Scarlet fever was reported to be widespread in Russia in the early autumn. Recent reports for Leningrad, where 450 cases and 55 deaths were reported for the three weeks ended November 22, compared with 466 cases and 65 deaths for the previous three weeks, seemed to indicate that the outbreak had reached its maximum in that city. This scarlet fever outbreak is accompanied by an epidemic of measles, of which 1,056 cases and 54 deaths were notified in Leningrad in the three weeks ended November 22. In Moscow, 2,168 cases of scarlet fever were reported in September, compared with 980 cases in August.

Diphtheria.—The incidence of diphtheria is higher in Great Britain, the Netherlands, and Germany than in 1923, which was a favorable year as regards this disease. Its prevalence is low in eastern and southeastern Europe. In the United States also the incidence of diphtheria has remained lower than in 1923.

RAT-EXTERMINATION MEASURES EMPLOYED AT LIVERPOOL, ENGLAND

The following information relative to rat-eradication measures employed by the health authorities at Liverpool, England, is taken from a recent report on the subject made by the American consul at Liverpool.

The rats and mice (destruction) act of 1919, going into effect January 1, 1920, provided for the enforcement of rat-eradication measures by local authorities, or, in default of such action by the local authorities, by the Board of Agriculture and Fisheries. It provided a penalty for the failure of any person to take such steps as may from time to time be necessary for the destruction of rats or mice on property of which he may be occupier. By order in council dated August 10, 1922, the powers and duties of the Minister of Agriculture and Fisheries under the rats and mice (destruction) act, so far as they relate to the supervision of the administration and enforcement of that act in any port, sanitary district, or in regard to vessels, were transferred to the Minister of Health.

It has been estimated that the rat population of Great Britain more than equals the human population—about 40,000,000—and that each rat consumes about half a cent's worth of food per day. As this amounts to approximately $70,000,000 annually, the economic loss is large. And to this must be added the additional loss that results from the damage done to stored materials, buildings, underground pipes, and electric conduits.

But in addition to this economic question, there is the ever-present danger from plague where rats abound, particularly if they are allowed to thrive and multiply in seaports, where there is always the danger that plague may be introduced by means of infected rats brought in from some infected port. Plague is primarily a disease of rats and is conveyed to man by the bite of the rat flea, which will leave a rat dying of plague as soon as the body becomes cold to seek another host. In this manner the disease is spread among the rodents; and should the new host happen to be man, then a case of human plague is likely to be the result.

Because of this danger to the public health, the fight against rats is constantly being carried on in Liverpool, and a large force of highly

trained men is engaged in rat-eradicative work. Under legislative authority the responsibility of keeping the rat population at a minimum falls on the officer of public health of the port of Liverpool, under whose general supervision the following personnel (listed under sanitary authorities) devote themselves entirely to the destruction of rats:

OFFICER OF PUBLIC HEALTH

SANITARY AUTHORITIES

For the city	*For the port*
1 assistant officer of public health.	1 assistant officer of public health.
1 chief inspector.	1 chief inspector.
1 department chief inspector.	1 department chief inspector.
33 inspectors.	5 qualified sanitary inspectors.
8 rat catchers.	7 rat catchers.
	3 rat searchers.

For the purpose of carrying out rat-suppressive measures, the city is divided into three zones, as follows:

Zone 1, ships in port.

Zone 2—

(*a*) Docks.

(*b*) Neighboring warehouse districts.

Zone 3, remainder of city.

In the first and second zones the port sanitary authorities carry on their operations, while in zone 3 the work is done entirely by the city sanitary authorities. These two bodies, owing to the different character of the districts in which they operate, are entirely separate units and are responsible only to the officer of public health.

CITY OPERATIONS

The city proper is divided into 30 zones or districts, and each zone is in charge of an inspector who constantly inspects all buildings in his zone and takes the necessary steps to abolish conditions favorable to rat harborage. Three inspectors are used for special and relief work.

The rat catchers are not permanently assigned to any particular district, but are governed in their operations by the reports of the inspectors of the various districts and reports from private individuals.

PORT OPERATIONS

The officials of the port sanitary authority wage a continuous war on rats aboard ships and in all parts of the dock estate. Efforts are made to prevent rats from landing from incoming ships for two reasons: (1) To prevent any increase in the rat population; and (2) to prevent the spread of plague infection, since a large amount of

shipping in Liverpool comes from plague-infected ports. The objects constantly in view are:

(1) The early detection of plague-infected rats;
(2) The prevention of spread of infection when found;
(3) The reduction in the number of rats on ships and wharves, since the spread of plague is directly proportional to the density of the rat population; and
(4) The reduction in the number of rats for economic reasons.

To detect plague infection, all rats caught by the rat catchers are examined bacteriologically.

Sanitary inspectors.—In addition to dealing with general port sanitary conditions, the sanitary inspectors board all ships entering port to learn of the prevalence of rats on board, and whether any sick or dead rats were reported during the voyage.

Rat searchers.—The rat searchers devote all their time to the searching of ships and wharves for sick and dead rats and for indications that determine whether or not fumigation is necessary. Especial attention is paid to ships arriving from plague-infected ports. When not engaged on ships, the rat searchers work systematically from one end of the docks to the other.

Rat catchers.—Three rat catchers are employed on ships and four on the wharves. Chief attention is paid to ships from plague-infected and suspected ports. The work of the catchers is guided by reports of the sanitary inspectors and the rat searchers. In case plague is suspected, both searchers and catchers are concentrated on the suspected area, and extensive rat-extermination measures are immediately instituted.

All rats caught by the rat catchers and all sick and dead rats found are sent to the city bacteriologist for examination. A method has been devised whereby an accurate record is kept of all rats caught and those found sick or dead; and in case a rat is found to be infected, the locality from which it came can be immediately determined.

Rat destruction.—The methods of rat destruction generally employed—trapping, poisoning, and fumigation—have been found to be most satisfactory by the port sanitary authorities.

The traps used are the baited, wire-cage traps, which are used both on wharves and ships, the snap, or breakback traps, unsuitable for ships but used in sheds, where they are placed across the runway, and birdlime traps. The range of the latter is limited, as they are generally unsuitable for outdoor work unless the weather is warm enough to keep the surface sticky.

The wire trap, containing some attractive bait, is set at a suitable place in the line of the run. It is covered with canvas sacking or some such material, only the ends being left open. It has been found that clever concealment is of the greatest importance in preventing rats

from becoming trap shy. Rats soon learn to distrust all wire contrivances; and it can not be too strongly emphasized that for any method of rat catching and rat destruction to be successful it must be employed by men who understand rats and appreciate their intelligence and cunning, and who can alter the methods as soon as the rats' suspicions have been aroused.

Poison is not used to any great extent by the port sanitary authorities, as it is the rule to regard with suspicion all rats found dead until the absence of plague infection is proved. Poisoning is always intrusted to men who understand how to make poison bait attractive to rats and who are careful to see that no risk of contaminating human food is involved.

In a few cases where numerous rat runs have been found in soft ground, fumigation with SO_2 has been attempted. In no case did it cause the rats to bolt from the open holes; and it is not known whether the rats escaped by means of underground runs or whether they were killed in their holes; but, after fumigation, holes have been watched for several months and no evidence of the return of the rats has been noted.

Rat guards.—Circular, metal, rimless rat guards, 3 feet in diameter, are used on mooring ropes of vessels. Experience has shown that such rat guards are effective and preferable to the method of parceling the cables and smearing them with tar. Some difficulty is experienced in keeping the guards in position, and one steamship line employs a man whose whole time is devoted to keeping the rat guards on the mooring ropes of their ships properly adjusted.

Fumigation.—In Liverpool, fumigation of vessels is carried out as follows:

(*a*) When there is suspicion of plague infection among the rats on board;

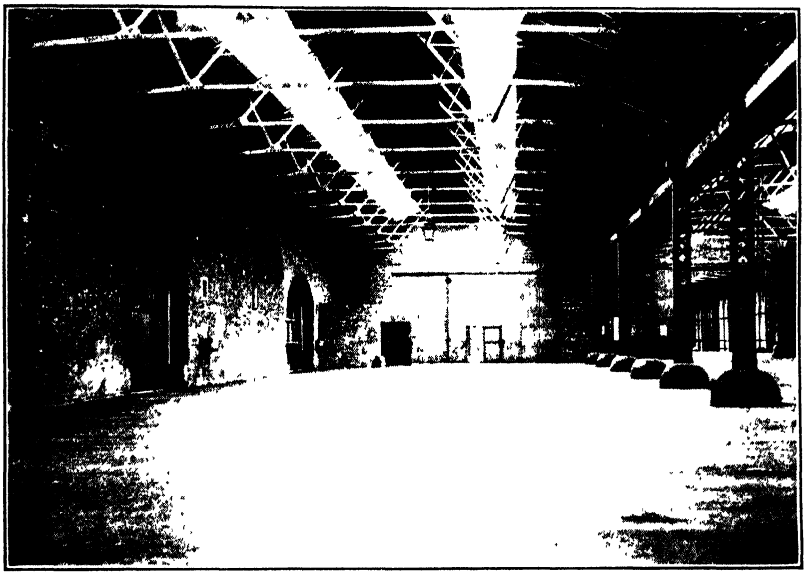
(*b*) To comply with the requirements of certain foreign governments which demand a certificate of fumigation; and

(*c*) Whenever the investigation of the rat searchers and rat catchers of the port sanitary authorities indicate that the vessel is rat infested.

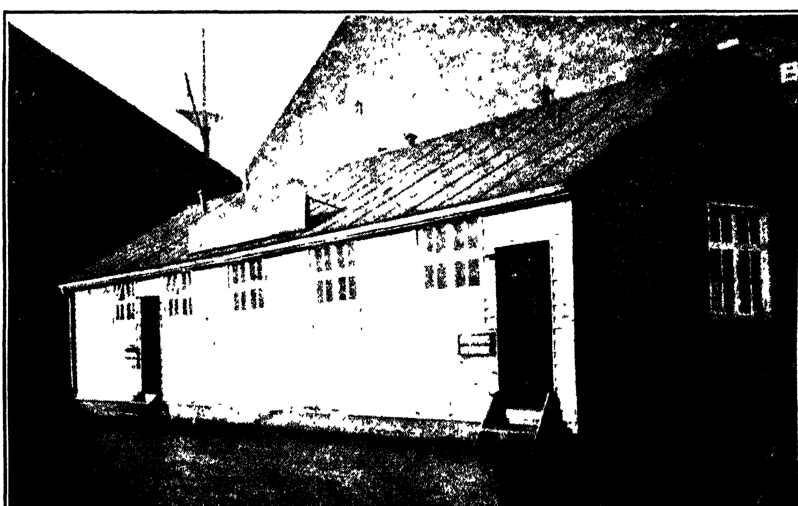
The report states that it is realized that a system of regular fumigation at intervals of six months would be of great value as an anti-rat measure; but, it is stated, the cost of fumigation and the delay occasioned constitute serious objections to such a system.[1]

---

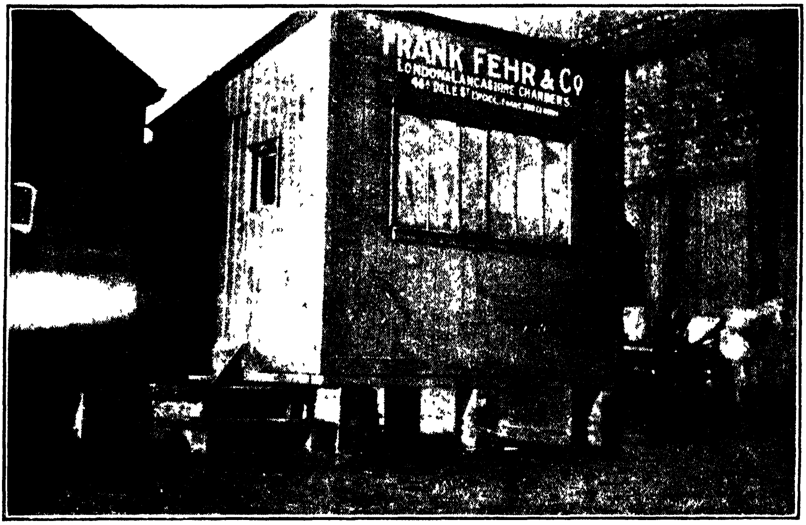
[1] Editorial note Many large ports regularly apply rat-eradicative measures As reported some time ago, regular measures for the destruction of rats are applied to all vessels calling at Hamburg, Germany Every vessel entering the port is required to carry out deratization measures On arrival, all seagoing vessels receive orders to fumigate the holds with sulphur and charcoal after the cargo has been unloaded and to place rat poison in other parts of the vessel Vessels which call at Hamburg at regular intervals are required to apply the measures for the destruction of rats only every three months Rat inspectors and rat catchers are also employed, and the campaign of rat destruction is carried out both on vessls and on shore, the work being in charge of officially qualified Government disinfectors and vermin destroyers.—Health Measures at German Seaports Pub Health Repts, May 25, 1923, p 1141.



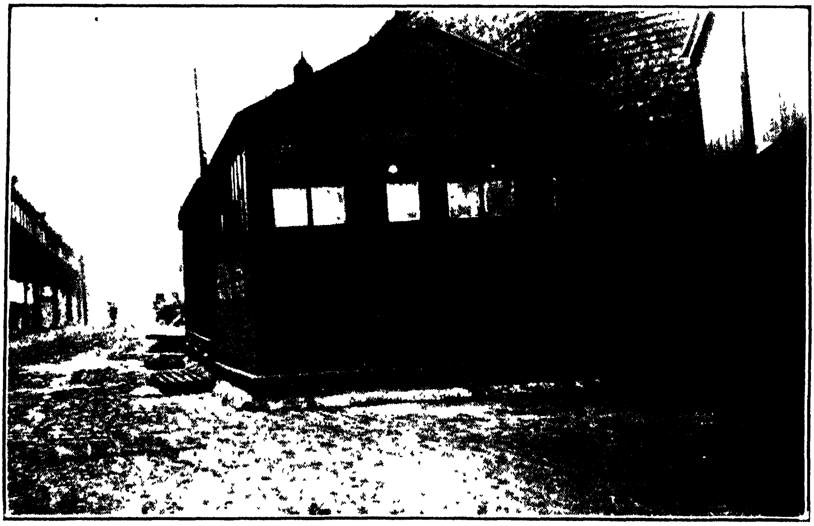
Rat-proof storehouse on dock estate at Liverpool, England



Concrete rat-proofing around base of sheds and offices on dock



Raised-building method of rat-proofing



Method of rat proofing shacks by means of concrete curbing

In Liverpool, ships are fumigated only after the discharge of their cargoes. SO_2 is used, the sulphur being burned in iron pots standing in trays of water. In the case of oil-burning vessels, cylinders of liquid SO_2 are used.

If plague-infected rats are found upon a vessel entering port, the following precautions are immediately taken:

The vessel is breasted six feet from the wharf. Rat guards are placed on the mooring ropes. The gangway is whitewashed and is hoisted when the vessel is not working. When the gangway is down, a guard is placed at each end. The port sanitary authority's entire complement of men is rushed to the vessel, extra labor is engaged, and the cargo and vessel are searched for rats. Information concerning the crew is obtained, and any members or workers absent from duty through sickness are visited. Local disinfection of different parts of the ship is carried on while unloading. Finally, complete and simultaneous fumigation of the whole vessel is done after it has been unloaded. Workers on the ship and wharf are kept under observation for seven days after fumigation of the vessel.

Rat proofing.—Even prior to the passage of the rats and mice (destruction) act of 1919, the city and port authorities had enlisted the aid of the owners of the large warehouses, storerooms, etc., in the fight against the rat. The above-mentioned act placed upon the occupier of the building the responsibility of keeping premises of all types clear of rats; and now the occupiers of large buildings employ private rat catchers and cooperate whole-heartedly with the sanitary authorities.

It is well known, however, that trapping and poisoning can not be really effective against a rat population which has every facility for nesting and breeding and an ample available food supply. Therefore, all types of buildings on the docks, but particularly those used for foodstuffs, are made as nearly rat proof as possible. The only really permanent effective measures against the rat are those which eliminate rat harborages. If the rats are presented with an acute housing problem and a high (mortality) cost of living, they can not multiply to any great extent. Therefore, the campaign of rat proofing is constantly being waged with excellent results, and, with few exceptions, the sheds on the wharves are of rat-proof construction, and care is taken to see that cargo, working gears, etc., furnish no harborage. Huts and offices are all raised 18 inches or two feet above the floor level, and the space beneath is kept clear of refuse.

In the supervision of the districts the sanitary authorities now have the active cooperation of the proprietors of buildings, and a notice sent to them regarding rat-protective conditions is sufficient to secure immediate correction. Since the passage of the rats and mice (destruction) act, no legal action has been required to enforce the necessary rat-eradication measures.

NANTES, FRANCE, PROVIDES FOREIGN SEAMEN FREE TREATMENT FOR VENEREAL DISEASES

In accordance with a recent international convention recommending that members of foreign crews be given free treatment for venereal diseases by the local authorities of ports of call, the city of Nantes, France, has taken steps to carry out the provision; and in order to inform all persons concerned, the mayor of Nantes has published the announcement below, copies of which are distributed to the commanders of all vessels entering the port:

NOTICE TO SEAMEN

Venereal prophylaxis

(Ministerial Circular of November 24, 1924)

Persons of foreign nationality belonging to the crews of merchant vessels are informed that in case of venereal diseases they may receive care and treatment at the City Dispensary (Dispensaire Municipal) situated on the Rue des Réformes, Nantes-Chantenay.

Special consultations are given at the above dispensary by a specialist at the following hours:

Tuesdays and Saturdays	7.30 p. m.
Sundays	10.00 a. m.

Applicants are not required to state their names or other identity. This notice is sufficient to gain admittance.

Consultations and care are free.

Should additional medicines be required for treatment while at sea and until the first port of call, these will also be furnished free of charge.

NOTE.—A schedule of treatment will be given to patients which allows them to obtain in their country or at ports of call necessary continuation of treatment.

DEATHS DURING WEEK ENDED FEBRUARY 21, 1925

Summary of information received by telegraph from industrial insurance companies for week ended February 21, 1925, and corresponding week of 1924. (From the Weekly Health Index, February 25, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended Feb. 21, 1925	Corresponding week, 1924
Policies in force	58, 724, 193	55, 075, 669
Number of death claims	12, 992	9, 758
Death claims per 1,000 policies in force, annual rate	11. 5	9. 2

Deaths from all causes in certain large cities of the United States during the week ended February 21, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, February 25, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Feb. 21, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Feb. 21, 1925 [2]
	Total deaths	Death rate [1]		Week ended Feb 21, 1925	Corresponding week, 1924	
Total (63 cities)	7, 514	14. 5	[3] 14. 2	871	[3] 910	
Akron	47			9	5	99
Albany [4]	45	19 6	14. 5	7	2	156
Atlanta	98	22 0	24. 3	9	17	
Baltimore [4]	256	16 8	15. 4	23	34	67
Birmingham	97	21 6	19 5	13	11	
Boston	265	17. 6	16. 4	35	40	93
Bridgeport	27			5	2	79
Buffalo	121	11 4	14 3	20	34	81
Cambridge	37	17 2	10 7	5	2	86
Camden	28	11 3	16. 1	4	3	66
Chicago [4]	754	13 1	13. 4	98	113	87
Cincinnati	131	16. 7	17. 0	16	15	95
Cleveland	215	12. 0	11. 9	36	31	89
Columbus	69	13 1	14 0	5	9	47
Dallas	54	14 6	14. 7	11	4	
Dayton	53	16 0	11. 1	5	6	80
Denver	79			7	8	
Des Moines	42	14 7	12 6	5	1	86
Detroit	289			57	55	96
Duluth	25	11 8	12 0	5	3	106
Erie	29			2	2	39
Fall River [4]	45	19 4	11. 6	6	7	86
Flint	23			3	7	49
Fort Worth	40	13 7	14 1	2	2	
Grand Rapids	32	11. 1	11 2	7	2	109
Houston	61			7	4	
Indianapolis	120	17 4	13 5	13	5	90
Jacksonville, Fla	36	17 9	16 3	1	2	22
Jersey City	92	15 2	15 7	14	17	98
Kansas City, Kans	46	19. 4	13. 7	5	7	105
Los Angeles	254			22	27	61
Louisville	75	15 1	19 2	10	11	87
Lowell	29	13 0	14 0	5	4	87
Lynn	23	11. 5	7 0	2	0	53
Memphis	70	20 9	24 8	14	5	
Milwaukee	115	12. 0	9 9	18	19	82
Minneapolis	109	13 4	13. 9	16	17	80
Nashville [4]	42	17. 6	22. 0	8	12	
New Bedford	33	12 7	11. 8	4	3	66
New Haven	57	16. 6	11. 6	0	4	0
New Orleans	210	26. 4	22. 2	18	15	
New York	1, 534	13. 1	13 2	168	167	67
Bronx Borough	186	10. 7	9. 4	19	12	66
Brooklyn Borough	506	11. 8	11. 5	60	56	63
Manhattan Borough	684	15. 8	16. 5	73	83	73
Queens Borough	122	11. 1	11. 7	14	15	69
Richmond Borough	36	14. 0	14. 4	2	1	36

[1] Annual rate per 1,000 population

[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.

[3] Data for 62 cities.

[4] Deaths for week ended Friday, Feb. 20, 1925.

Deaths from all causes in certain large cities of the United States during the week ended February 21, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924—Continued

City	Week ended Feb. 21, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Feb. 21, 1925
	Total deaths	Death rate		Week ended Feb. 21, 1925	Corresponding week, 1924	
Newark, N. J	116	13 4	13.8	18	10	82
Norfolk	33	10.2	12.7	3	5	53
Oakland	57	11.7	9.0	2	8	23
Oklahoma City	24	11.7	13.0	1	3	
Omaha	45	11.1	13.5	5	7	48
Paterson	31	11.4	17.1	3	10	50
Philadelphia	641	16.9	13.9	70	61	88
Pittsburgh	215	17.8	19.2	30	33	105
Portland, Oreg	68	12.6	13.3	9	9	93
Providence	70	14.9	19.5	8	15	64
Richmond	64	17 9	17.6	7	10	85
Rochester	68	10.7		5		40
St. Louis	246	15 6	14.4	13	18	
Salt Lake City [4]	38	15.1	16 6	6	5	94
San Antonio	57	15 0	21.8	8	11	
San Francisco	156	14.6	14.9	10	21	58
Schenectady	21	10.7	18.7	3	5	85
Seattle	77			7	6	71
Somerville	26	13.3	7.8	3	1	80
Spokane	26			5	0	109
Springfield, Mass	32	10 9	11.6	3	3	45
Syracuse	51	13.9	11.6	4	3	50
Tacoma	26	13.0	7.6	2	2	48
Toledo	72	13 1	11.5	10	10	91
Trenton	44	17.4	11.7	7	2	114
Utica	21	10.2	12.4	4	2	82
Washington, D. C	159	16.7	15.5	3	16	17
Waterbury	33			4	5	88
Wilmington, Del	32	13 7	12.6	7	2	160
Worcester	48	12.6	14.9	7	3	81
Yonkers	22	10.3	10.9	2	3	44
Youngstown	33	10.8	14.5	10	8	127

[4] Deaths for week ended Friday, Feb. 20, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended February 28, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	6
Chicken pox	65
Diphtheria	14
Dysentery	7
Influenza	866
Lethargic encephalitis	2
Malaria	8
Measles	20
Mumps	91
Pellagra	6
Pneumonia	274
Smallpox	200
Tuberculosis	51
Typhoid fever	14
Whooping cough	41

ARIZONA

	Cases
Chicken pox	10
Diphtheria	1
Measles	47
Pneumonia	1
Scarlet fever	7
Smallpox	2
Tuberculosis	1

ARKANSAS

	Cases
Cerebrospinal meningitis	2
Chicken pox	49
Diphtheria	11
Influenza	406
Malaria	24
Measles	23
Mumps	53
Ophthalmia neonatorum	1
Pellagra	5
Scarlet fever	7
Smallpox	8
Trachoma	1
Tuberculosis	5
Typhoid fever	5
Whooping cough	11

CALIFORNIA

	Cases
Cerebrospinal meningitis—Pasadena	1
Diphtheria	118
Influenza	105
Leprosy Los Angeles County	1
Lethargic encephalitis—San Francisco	1
Measles	49
Poliomyelitis:	
Glendale	1
Oakland	1
Scarlet fever	136
Smallpox:	
Los Angeles	57
San Diego	24
San Francisco	9
Yuba County	11
Scattering	70
Typhoid fever	3

COLORADO

(Exclusive of Denver)

	Cases
Chicken pox	43
Diphtheria	24
Influenza	1
Measles	2
Mumps	18
Pneumonia	4
Scarlet fever	15
Tuberculosis	45
Typhoid fever	3
Whooping cough	7

CONNECTICUT

	Cases
Chicken pox	58
Conjunctivitis	1
Diphtheria	45
German measles	58
Influenza	22
Measles	77
Mumps	25
Ophthalmia neonatorum	1
Pneumonia (all forms)	93

CONNECTICUT—continued	Cases
Scarlet fever	165
Septic sore throat	3
Trachoma	1
Trichinosis	1
Tuberculosis (all forms)	28
Typhoid fever	6
Whooping cough	30

DELAWARE

Anthrax	1
Chicken pox	3
Diphtheria	1
Measles	1
Mumps	1
Pneumonia	4
Scarlet fever	7
Tuberculosis	4

FLORIDA

Diphtheria	5
Influenza	14
Malaria	11
Pneumonia	5
Scarlet fever	6
Smallpox	4
Typhoid fever	7

GEORGIA

Chicken pox	53
Conjunctivitis (infectious)	3
Diphtheria	14
Dysentery	4
Hookworm disease	8
Influenza	1,022
Malaria	22
Measles	2
Mumps	116
Pellagra	8
Pneumonia	120
Rabies in man	4
Scarlet fever	3
Septic sore throat	16
Smallpox	12
Trachoma	1
Tuberculosis	33
Typhoid fever	14
Whooping cough	49

ILLINOIS

Cerebrospinal meningitis—Cook County	3
Diphtheria:	
Cook County	58
Scattering	46
Influenza	36
Lethargic encephalitis:	
Cook County	2
Rock Island County	1
Wayne County	1
Winnebago County	1
Measles	809
Pneumonia	397
Poliomyelitis:	
Cass County	1
Champaign County	1
Coles County	1
Edgar County	1
Tazewell County	1

ILLINOIS—continued	Cases
Scarlet fever:	
Cook County	335
Kane County	9
McLean County	12
St. Clair County	18
Sangamon County	9
Will County	9
Scattering	111
Smallpox:	
Alexander County	15
St. Clair County	9
Scattering	25
Tuberculosis	348
Typhoid fever	33
Whooping cough	209

INDIANA

Cerebrospinal meningitis—Elkhart County	1
Chicken pox	125
Diphtheria	46
Influenza	226
Measles	126
Mumps	8
Pneumonia	21
Poliomyelitis—Lake County	1
Scarlet fever:	
Allen County	15
Elkhart County	20
Huntington County	16
St. Joseph County	63
Vanderburgh County	19
Vigo County	19
Scattering	93
Smallpox:	
Hendricks County	9
Marion County	15
Vigo County	16
Scattering	67
Trachoma	1
Tuberculosis	25
Typhoid fever	5
Whooping cough	49

IOWA

Diphtheria	27
Scarlet fever	38
Smallpox	24
Typhoid fever	2

KANSAS

Cerebrospinal meningitis	1
Chicken pox	131
Diphtheria	32
Influenza	24
Measles	10
Mumps	402
Pneumonia	77
Scarlet fever	128
Smallpox	4
Tuberculosis	18
Typhoid fever	1
Whooping cough	21

LOUISIANA

Diphtheria	18
Hookworm disease	10
Influenza	73
Malaria	5

LOUISIANA—continued	Cases
Pneumonia	53
Scarlet fever	20
Smallpox	42
Tuberculosis	21
Typhoid fever	18

MAINE	
Chicken pox	15
Diphtheria	4
Mumps	59
Pneumonia	14
Scarlet fever	20
Tuberculosis	12
Whooping cough	2

MARYLAND [1]	
Cerebrospinal meningitis	1
Chicken pox	112
Diphtheria	47
Dysentery	1
German measles	3
Influenza	100
Measles	46
Mumps	86
Pneumonia (all forms)	180
Poliomyelitis	1
Scarlet fever	118
Septic sore throat	2
Tuberculosis	52
Typhoid fever	8
Vincent's angina	1
Whooping cough	82

MASSACHUSETTS	
Anthrax	1
Cerebrospinal meningitis	3
Chicken pox	219
Conjunctivitis (suppurative)	8
Diphtheria	119
German measles	210
Influenza	61
Lethargic encephalitis	3
Measles	628
Mumps	63
Ophthalmia neonatorum	25
Pellagra	1
Pneumonia (lobar)	165
Poliomyelitis	2
Scarlet fever	338
Septic sore throat	2
Trachoma	4
Tuberculosis (all forms)	152
Typhoid fever	3
Whooping cough	126

MICHIGAN	
Diphtheria	73
Measles	160
Pneumonia	198
Scarlet fever	375
Smallpox	11
Tuberculosis	362
Typhoid fever	10
Whooping cough	149

[1] Week ended Friday.

MINNESOTA	Cases
Chicken pox	120
Diphtheria	80
Influenza	2
Measles	44
Pneumonia	13
Poliomyelitis	1
Scarlet fever	251
Smallpox	38
Tuberculosis	31
Typhoid fever	13
Whooping cough	19

MISSISSIPPI	
Cerebrospinal meningitis	1
Diphtheria	12
Influenza	460
Scarlet fever	6
Smallpox	28
Typhoid fever	8

MISSOURI

(Exclusive of Kansas City)

Cerebrospinal meningitis	1
Chicken pox	136
Diphtheria	104
Influenza	60
Malaria	6
Measles	17
Mumps	105
Pneumonia	161
Rabies	8
Scarlet fever	801
Smallpox	38
Trachoma	21
Tuberculosis	91
Typhoid fever	5
Whooping cough	43

NEBRASKA	
Chicken pox	34
Diphtheria	12
Influenza	4
Lethargic encephalitis	1
Measles	2
Mumps	33
Pneumonia	1
Scarlet fever	18
Septic sore throat	1
Smallpox	35
Whooping cough	10

NEW JERSEY	
Anthrax	3
Cerebrospinal meningitis	2
Chicken pox	160
Diphtheria	96
Influenza	58
Measles	143
Paratyphoid fever	1
Pneumonia	143
Poliomyelitis	1
Scarlet fever	332
Smallpox	2
Typhoid fever	4
Whooping cough	234

NEW MEXICO

	Cases
Chicken pox	16
Conjunctivitis	2
Diphtheria	12
German measles	6
Influenza	41
Measles	4
Mumps	11
Pneumonia	15
Scarlet fever	2
Septic sore throat	2
Tuberculosis	10
Typhoid fever	1
Whooping cough	1

NEW YORK

(Exclusive of New York City)

	Cases
Cerebrospinal meningitis	2
Diphtheria	101
Influenza	97
Lethargic encephalitis	2
Measles	437
Pneumonia	395
Scarlet fever	343
Smallpox	4
Typhoid fever	30
Whooping cough	290

NORTH CAROLINA

	Cases
Chicken pox	158
Diphtheria	31
German measles	1
Measles	23
Scarlet fever	26
Smallpox	94
Typhoid fever	1
Whooping cough	50

OKLAHOMA

(Exclusive Oklahoma City and Tulsa)

	Cases
Cerebrospinal meningitis—Logan	1
Diphtheria	15
Influenza	491
Scarlet fever:	
Pontotoc County	13
Scattering	13
Smallpox	6
Pneumonia	136
Typhoid fever	7

OREGON

	Cases
Chicken pox	24
Diphtheria:	
Portland	16
Scattering	8
Influenza	16
Lethargic encephalitis	[1] 1
Measles	4
Mumps	14
Pneumonia	[1] 11
Poliomyelitis	1
Scarlet fever	35
Smallpox:	
Portland	18
Scattering	7
Tuberculosis	32
Typhoid fever	1
Whooping cough	18

[1] Deaths.

SOUTH DAKOTA

	Cases
Chicken pox	16
Diphtheria	2
Measles	4
Poliomyelitis	1
Scarlet fever	26
Smallpox	4
Trachoma	1
Tuberculosis	2
Whooping cough	8

TEXAS

	Cases
Chicken pox	53
Diphtheria	39
Dysentery (epidemic)	4
Influenza	1,468
Measles	32
Mumps	121
Ophthalmia neonatorum	2
Paratyphoid fever	1
Pellagra	9
Pneumonia	111
Poliomyelitis	1
Scarlet fever	23
Smallpox	30
Trachoma	1
Typhoid fever	5
Tuberculosis	17
Whooping cough	70

VERMONT

	Cases
Chicken pox	59
Diphtheria	2
Measles	9
Mumps	67
Pneumonia	1
Scarlet fever	10
Whooping cough	36

WASHINGTON

	Cases
Cerebrospinal meningitis—Ferry County	1
Chicken pox	84
Diphtheria	52
German measles	81
Measles	9
Mumps	68
Pneumonia	1
Poliomyelitis	1
Scarlet fever	26
Septic sore throat	1
Smallpox	86
Tuberculosis	32
Typhoid fever	2
Whooping cough	52

WEST VIRGINIA

	Cases
Diphtheria	11
Scarlet fever	16
Smallpox	5

WISCONSIN

	Cases
Milwaukee:	
Chicken pox	39
Diphtheria	15
German measles	488
Influenza	1
Measles	354

WISCONSIN—continued	Cases
Milwaukee—Continued.	
Mumps	93
Ophthalmia neonatorum	1
Pneumonia	5
Scarlet fever	16
Smallpox	5
Whooping cough	20
Scattering:	
Chicken pox	209
Diphtheria	15
German measles	70
Influenza	49
Measles	287
Mumps	395
Ophthalmia neonatorum	3
Pneumonia	29
Scarlet fever	148

WISCONSIN—continued	Cases
Smallpox	60
Tuberculosis	25
Typhoid fever	3
Whooping cough	84

WYOMING	
Chicken pox	14
Diphtheria	2
German measles	1
Influenza	1
Measles	8
Mumps	9
Pneumonia	4
Scarlet fever	9
Smallpox	4
Typhoid fever	6

Reports for Week Ended February 21, 1925

DISTRICT OF COLUMBIA	Cases
Chicken pox	17
Diphtheria	15
Influenza	3
Lethargic encephalitis	1
Measles	12
Pneumonia	29
Scarlet fever	33
Smallpox	4
Tuberculosis	35
Typhoid fever	1
Whooping cough	7

GEORGIA	
Cerebrospinal meningitis	2
Chicken pox	64
Conjunctivitis (infectious)	1
Dengue	3
Diphtheria	32
Dysentery (amebic)	5
Hookworm disease	7
Influenza	1,261
Malaria	24
Measles	5
Mumps	93
Paratyphoid fever	17
Pellagra	9
Pneumonia	177
Rabies in man	2
Scarlet fever	6

GEORGIA—continued	Cases
Septic sore throat	18
Smallpox	20
Tetanus	2
Tuberculosis (pulmonary)	41
Typhoid fever	21
Typhus fever	1
Whooping cough	43

NEBRASKA	
Chicken pox	27
Diphtheria	13
Lethargic encephalitis	1
Measles	2
Mumps	1
Ophthalmia neonatorum	1
Scarlet fever	49
Smallpox	24
Typhoid fever	5
Whooping cough	4

NORTH DAKOTA[1]	
Chicken pox	95
Diphtheria	28
German measles	1
Mumps	33
Pneumonia	16
Poliomyelitis	2
Scarlet fever	83
Smallpox	8
Tuberculosis	3
Whooping cough	21

[1] Reports for two weeks ended Feb. 21, 1925.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
December, 1924										
Tennessee	2	94	275	32	154	73	1	186	161	94
January, 1925										
Idaho	0	1	8	0	....	0	0	54	0	0
Kansas	8	159	50	0	24	0	0	530	38	4
Mississippi	0	138	9,550	2,481	302	169	1	69	141	123
Montana	2	52	9	....	31	....	....	169	97	6
North Carolina	7	205	....	....	117	....	0	180	311	8
Ohio	5	503	116	0	390	0	5	2,128	706	91
Oklahoma [1]	4	107	2,882	72	45	10	3	221	131	137
Oregon	2	129	6	....	29	....	3	182	170	10
Pennsylvania	6	961	....	....	2,356	....	4	2,690	27	95
South Carolina	....	100	202	74	1	....	....	8	92	10
South Dakota	1	37	....	....	15	....	1	241	45	15
Virginia	10	176	7,551	43	459	5	3	239	27	24
Washington	0	180	....	0	66	0	12	218	145	28

[1] Exclusive of Oklahoma City and Tulsa.

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended February 14, 1925:

Los Angeles, Calif.

Week ended February 14, 1925:

Number of rats found to be plague infected 1

Totals to February 14, 1925:

Number of rats found to be plague infected 83

Oakland, Calif.

Week ended February 14, 1925:

Number of rats trapped 2,755

Number of rats found to be plague infected 2

Totals to February 14, 1925:

Number of rats trapped 12,882

Number of rats found to be plague infected 18

New Orleans, La.

Week ended February 14, 1925:

Number of vessels inspected 341

Number of inspections made 1,031

Number of vessels fumigated with cyanide gas 42

Number of rodents examined for plague 5,342

Number of rodents found to be plague infected 0

Totals to February 14, 1925:

Number of rodents examined 37,358

Number of rodents found to be plague infected 12

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended February 14, 1925, 34 States reported 1,553 cases of diphtheria. For the week ended February 16, 1924, the same States reported 2,097 cases of this disease. One hundred and three cities, situated in all parts of the country and having an aggregate population of more than 28,700,000, reported 929 cases of diphtheria for the week ended February 14, 1925. Last year, for the corresponding week, they reported 1,206 cases. The estimated expectancy for these cities was 1,130 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Twenty-nine States reported 3,003 cases of measles for the week ended February 14, 1925, and 18,451 cases of this disease for the week ended February 16, 1924. One hundred and three cities reported 1,639 cases of measles for the week this year, and 6,529 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 34 States—this year, 4,219 cases; last year, 4,228; 103 cities—this year, 2,208; last year, 1,796; estimated expectancy, 1.061 cases.

Smallpox.—For the week ended February 14, 1925, 34 States reported 1,060 cases of smallpox. Last year, for the corresponding week, they reported 997 cases. One hundred and three cities reported smallpox for the week as follows: 1925, 434 cases; 1924, 448 cases; estimated expectancy, 96 cases. These cities reported 12 deaths from smallpox for the week this year, 8 of which occurred at Minneapolis.

Typhoid fever.—Two hundred and three cases of typhoid fever were reported for the week ended February 14, 1925, by 33 States. For the corresponding week of 1924 the same States reported 219 cases. One hundred and three cities reported 72 cases of typhoid fever for the week this year, and 73 cases for the week last year. The estimated expectancy for these cities was 53 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 103 cities as follows: 1925, 1,342 deaths; 1924, 1,205 deaths.

City reports for week ended February 14, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of expidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	9	2	3	0	0	0	52	2
New Hampshire:									
Concord	22,408	0	1	0	0	0	1	0	1
Vermont:									
Barre	[1] 10,008	0	0	0	0	2	0	5	0
Burlington	23,613	3	1	3	0	0	3	10	0
Massachusetts:									
Boston	770,400	39	68	44	47	3	175	5	48
Fall River	120,912	6	6	1	2	1	1	0	7
Springfield	144,227	9	5	2	0	1	71	6	1
Worcester	191,927	18	5	10	0	0	0	3	10
Rhode Island:									
Pawtucket	68,799	1	1	2	0	0	0	0	1
Providence	242,378	0	13	13	------	2	1	0	9
Connecticut:									
Bridgeport	[1] 143,555	2	9	10	1	0	1	1	4
Hartford	[1] 138,036	2	8	10	------	2	0	2	11
New Haven	172,967	15	4	4	3	0	16	2	2
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	12	23	10	0	1	15	7	22
New York	5,927,625	216	224	187	194	30	50	16	271
Rochester	317,867	2	9	0	0	0	16	21	5
Syracuse	184,511	9	8	2	0	0	3	15	5
New Jersey:									
Camden	124,157	1	4	3	0	0	2	1	6
Newark	438,699	35	22	4	5	0	35	5	10
Trenton	127,390	3	7	3	1	0	13	0	5
Pennsylvania:									
Philadelphia	1,922,788	79	76	92	------	9	156	24	94
Pittsburgh	613,442	57	24	16	------	3	246	12	38
Reading	110,917	17	4	0	------	1	2	11	0
Scranton	140,636	1	5	2	------	2	0	0	4
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	0	10	8	2	3	0	5	20
Cleveland	888,519	84	33	43	9	6	6	6	23
Columbus	261,082	10	4	2	------	3	1	7	10
Toledo	268,338	15	7	8	4	0	36	0	6
Indiana:									
Fort Wayne	93,573	11	4	4	0	0	3	0	1
Indianapolis	342,718	42	14	2	------	2	2	8	21
South Bend	76,709	10	1	1	0	0	6	0	4
Terre Haute	68,939	1	2	0	0	0	0	0	3
Illinois:									
Chicago	2,886,121	106	122	63	15	3	340	24	84
Cicero	55,968	3	2	0	0	0	7	1	0
Peoria	79,675	9	1	1	0	0	4	4	2
Springfield	61,833	4	2	3	0	0	2	33	4
Michigan:									
Detroit	995,668	50	65	26	6	5	15	4	49
Flint	117,968	14	8	0	0	0	0	1	1
Grand Rapids	145,947	6	3	0	0	1	22	1	3

[1] Population Jan. 1, 1920.

City reports for week ended February 14, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST NORTH CENTRAL—continued									
Wisconsin:									
Madison	42,519	7	1	3	0	0	0	147	2
Milwaukee	484,595	43	18	17	0	0	284	75	0
Racine	64,393	20	1	5	0	0	7	4	2
Superior	[1] 39,671	3	1	1	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	14	3	0	0	0	0	0	2
Minneapolis	409,125	57	19	26	0	0	5	6	2
St. Paul	241,891	22	14	20	0	0	3	35	5
Iowa:									
Davenport	61,262	2	1	2	0	-	0	0	-
Des Moines	140,923	0	4	4	0	-	0	0	-
Sioux City	79,662	11	2	0	0	-	0	23	-
Waterloo	39,667	3	1	0	0	-	0	4	-
Missouri:									
Kansas City	351,819	18	9	6	6	5	3	23	28
St. Joseph	78,232	2	2	1	0	0	0	1	4
St. Louis	803,853	41	52	53	0	0	2	5	-
North Dakota:									
Fargo	24,841	-	0	-	-	-	-	-	-
Grand Forks	14,547	2	1	0	0	-	0	0	-
South Dakota:									
Aberdeen	15,829	1	-	0	0	-	0	0	-
Sioux Falls	29,206	1	1	3	0	0	0	0	0
Nebraska:									
Lincoln	58,761	3	2	1	0	1	0	0	0
Omaha	204,382	21	5	3	0	0	0	0	15
Kansas:									
Topeka	52,555	19	2	2	1	0	1	173	3
Wichita	79,261	18	1	7	0	0	0	2	4
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	-	2	-	-	-	-	-	-
Maryland:									
Baltimore	773,580	77	30	31	36	7	8	7	50
Cumberland	32,361	-	0	1	4	0	0	-	1
Frederick	11,301	-	1	0	0	0	0	-	0
District of Columbia:									
Washington	[1] 437,571	21	15	35	3	2	12	0	14
Virginia:									
Lynchburg	30,277	2	1	1	0	0	0	44	0
Norfolk	159,089	20	2	0	0	0	0	63	6
Richmond	181,044	3	4	9	-	3	1	2	8
Roanoke	55,502	7	1	2	-	2	1	0	1
West Virginia:									
Charleston	45,597	1	1	0	0	0	19	1	1
Huntington	57,918	0	1	0	0	-	0	0	-
Wheeling	[1] 56,208	3	1	2	0	1	2	0	3
North Carolina:									
Raleigh	29,171	10	1	0	0	0	0	0	2
Wilmington	35,719	4	0	0	0	0	0	2	3
Winston-Salem	56,230	2	1	0	0	0	3	2	2
South Carolina:									
Charleston	71,245	0	1	0	0	0	0	0	5
Columbia	39,688	2	0	0	0	1	0	2	3
Greenville	25,789	0	0	0	0	0	0	0	3
Georgia:									
Atlanta	222,963	4	2	4	27	5	0	1	19
Brunswick	15,937	-	0	0	12	1	0	-	0
Savannah	89,448	0	1	1	137	2	0	4	2
Florida:									
St. Petersburg	24,403	0	0	0	0	0	0	0	4
Tampa	56,050	0	2	0	5	2	0	2	0

[1] Population Jan. 1, 1920.

City reports for week ended February 14, 1925—**Continued**

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	1	2	0	0	0	0	2
Lexington	43,673	0	0	1	0	0	1	1	5
Louisville	257,671	1	6	3	3	0	0	0	17
Tennessee:									
Memphis	170,067		4	3		3	3		15
Nashville	121,128	1	1	0		2	9	1	1
Alabama:									
Birmingham	195,901	7	2	3	17	2	1	5	17
Mobile	63,858	0	1	0	36	4	0	0	3
Montgomery	45,383	2	1	1	14	0	0	5	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	4	0	1	0		4	9	
Little Rock	70,916	0	1	1	8	1	4	0	8
Louisiana:									
New Orleans	404,575	9	13	21	40	11	1	0	28
Shreveport	54,590	3		0	0	0	0	0	4
Oklahoma:									
Oklahoma	101,150	3	1	2	12	2	0	0	8
Texas:									
Dallas	177,274	15	6	8	31	3	1	0	23
Galveston	46,877	2	1	0	0	0	0	1	4
Houston	154,970	7	3	3	4	6	0	0	11
San Antonio	184,727	0	2	1		3	1	0	13
MOUNTAIN									
Montana:									
Billings	16,927	7	0	0	0	0	0	5	3
Great Falls	27,787	1	1	3	0	0	0	0	1
Helena	[1] 12,037		0	0	0	0	0		0
Missoula	[1] 12,668		1	0	0	0	10		0
Idaho:									
Boise	22,806	0	0	0	0	0	0	0	0
Colorado:									
Denver	272,031	0	11	4		3	1	76	12
Pueblo	43,519	7	3	1		2	1	9	7
Arizona:									
Phoenix	33,899	2		0		2	3	0	2
Utah:									
Salt Lake City	126,241	43	3	2		1	4	53	6
Nevada:									
Reno	12,429	1	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	57	6	6	0		2	27	
Spokane	104,573	28	4	6	0		1	0	
Tacoma	101,731	2	2	1	0	0	1	7	3
Oregon:									
Portland	273,621	16	7	17	0	0	4	6	2
California:									
Los Angeles	666,853	78	40	32	26	1	5	20	38
Sacramento	69,950	1	1	1	0		0	2	
San Francisco	539,038	31	26	16	6	0	1	27	6

[1] Population Jan. 1, 1920.

City reports for week ended February 14, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	2	3	0	0	0	1	0	2	0	3	28
New Hampshire:											
Concord	0	4	0	0	0	1	0	0	0	0	7
Vermont:											
Barre	1	0	0	0	0	1	0	0	0	0	7
Burlington	1	1	1	0	0	0	0	0	0	1	5
Massachusetts.											
Boston	55	108	0	0	0	16	2	5	0	60	288
Fall River	4	2	0	0	0	2	1	0	0	16	33
Springfield	8	27	0	0	0	1	0	0	0	4	37
Worcester	10	11	0	0	0	4	0	0	0	1	49
Rhode Island:											
Pawtucket	1	3	0	0	0	1	0	0	0	0	23
Providence	8	16	0	0	0	3	0	0	0	4	63
Connecticut:											
Bridgeport	5	18	0	0	0	2	0	1	0	1	29
Hartford	6	9	0	0	0	5	0	0	0	15	48
New Haven	7	26	0	0	0	1	0	0	0	5	....
MIDDLE ATLANTIC											
New York.											
Buffalo	20	18	0	3	0	12	1	0	0	30	147
New York	190	371	1	0	0	[1] 100	8	8	7	89	1,656
Rochester	11	52	0	0	0	5	0	1	0	4	67
Syracuse	18	6	0	0	0	1	0	0	0	0	46
New Jersey:											
Camden	2	18	0	2	2	2	0	0	0	4	40
Newark	23	47	0	0	0	14	0	0	0	45	118
Trenton	3	8	0	0	0	4	1	0	0	5	49
Pennsylvania											
Philadelphia	60	219	0	2	0	44	3	2	0	83	591
Pittsburgh	20	61	0	0	0	9	0	1	0	8	176
Reading	2	5	0	0	0	0	0	0	0	4	34
Scranton	4	1	0	0	0	1	0	0	0	17	....
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	9	22	1	1	0	8	1	3	0	1	131
Cleveland	32	30	1	0	0	18	1	2	0	23	185
Columbus	8	18	1	8	0	3	0	0	0	5	70
Toledo	18	23	4	0	0	7	0	0	0	22	65
Indiana:											
Fort Wayne	3	8	0	0	0	1	0	0	0	2	28
Indianapolis	10	6	3	6	0	8	1	0	0	10	111
South Bend	2	13	1	0	0	2	0	0	0	0	18
Terre Haute	2	3	1	17	0	0	0	0	0	0	16
Illinois.											
Chicago	96	273	3	1	1	48	3	2	0	163	687
Cicero	1	4	0	0	0	0	0	0	0	2	6
Peoria	5	11	0	0	0	2	0	0	0	1	25
Springfield	1	1	1	0	0	1	0	0	0	0	24
Michigan											
Detroit	82	91	4	3	0	19	2	1	0	26	280
Flint	9	2	2	0	0	2	0	0	0	0	13
Grand Rapids	8	26	0	0	0	1	0	0	0	3	34
Wisconsin:											
Madison	3	3	0	0	0	0	0	0	0	7	5
Milwaukee	38	25	1	7	0	0	1	0	0	32	113
Racine	5	4	1	3	0	1	0	0	0	0	15
Superior	2	7	4	1	0	0	0	0	0	0	8
WEST NORTH CENTRAL											
Minnesota:											
Duluth	4	17	1	0	0	2	0	0	0	0	21
Minneapolis	31	72	7	44	8	1	1	0	1	3	101
St. Paul	30	38	6	4	0	3	1	1	0	23	50

[1] Pulmonary tuberculosis only.

City reports for week ended February 14, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—contd.											
Iowa:											
Davenport	3	1	2	2			0	0		3	
Des Moines	9	1	3	0			0	0		0	
Sioux City	2	0	1	0			0	0		0	
Waterloo	3	4	0	6			0	0			
Missouri:											
Kansas City	12	102	2	4	0	9	1	4	1	1	112
St. Joseph	2	1	0	0	0	0	1	0	0	0	28
St. Louis	27	104	2	7	0	8	1	0	1	1	195
North Dakota:											
Fargo	1		0				0				
Grand Forks	1	1	1	1			0	0		0	
South Dakota:											
Aberdeen		0		0				0		0	
Sioux Falls	3	2	1	0	0	0	0	0	0	0	4
Nebraska:											
Lincoln	3	0	0	1	0	0	0	0	0	4	13
Omaha	5	1	2	27	0	2	0	0	0	0	69
Kansas:											
Topeka	1	3	0	0	0	0	1	0	0	4	15
Wichita	3	1	2	0	0	1	0	0	0	9	28
SOUTH ATLANTIC											
Delaware:											
Wilmington	3		0				0				
Maryland:											
Baltimore	38	58	0	0	0	21	2	1	0	103	268
Cumberland	1	1	1	0	0	2	0	0	0		13
Frederick	2	2	0	0	0	0	0	0	0		2
District of Col.:											
Washington	20	44	1	1	1	12	1	4	0	5	150
Virginia:											
Lynchburg	0	1	0	0	0	0	0	0	0	6	12
Norfolk	1	2	1	0	0	7	1	0	0	2	
Richmond	4	4	0	0	0	2	1	1	0	0	67
Roanoke	1	5	0	0	0	1	0	2	0	0	17
West Virginia:											
Charleston	1	1	1	2	0	0	0	0	0	0	19
Huntington	1	4	0	5			0	0		0	
Wheeling	1	2	0	0	0	1	1	1	0	5	14
North Carolina:											
Raleigh	1	0	0	2	0	0	0	0	0	0	15
Wilmington	0	0	0	7	0	0	0	0	0	7	12
Winston-Salem	1	1	0	6	0	0	0	0	0	3	13
South Carolina:											
Charleston	0	0	0	1	0	4	1	0	0	0	23
Columbia	0	1	0	1	0	0	1	0	0	0	22
Greenville	0	0	0	23	0	0	0	0	0	0	11
Georgia:											
Atlanta	3	8	2	2	0	8	0	0	0	4	109
Brunswick	0	0	0	0	0	0	0	0	0		2
Savannah	0	0	0	0	0	4	1	0	0	0	40
Florida:											
St. Petersburg	1	0	0	0	0	0	0	0	0	0	19
Tampa	0	0	0	1	0	1	1	1	1	0	10
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	3	1	0	0	1	0	0	0	2	17
Lexington	1	2	0	0	0	1	0	0	0	0	14
Louisville	4	12	1	6	0	4	0	1	0	5	82
Tennessee:											
Memphis	2	6	2	4	0	1	1	4	1		67
Nashville	2	5	0	4	0	6	0	0	0	0	37
Alabama:											
Birmingham	2	11	0	103	1	2	0	2	0	5	72
Mobile	1	0	1	1	0	2	0	0	0	0	33
Montgomery	0	0	0	0	0	0	0	0	0	0	15

City reports for week ended February 14, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	7	0	7			0	0		2	
Little Rock	2	1	0	0	0	2	0	1	0	0	
Louisiana:											
New Orleans	3	9	3	2	0	15	2	4	4	0	207
Shreveport		1		0	0	1		2	0	0	17
Oklahoma:											
Oklahoma	2	0	3	0	0	3	0	0	0	2	24
Texas:											
Dallas	2	5	2	0	0	5	1	1	1	4	70
Galveston	0	0	0	6	0	1	0	0	0	0	18
Houston	1	0	1	15	0	8	1	0	1	0	54
San Antonio	1	3	0	0	0	9	1	2	0	0	55
MOUNTAIN											
Montana:											
Billings	1	10	0	0	0	0	0	0	0	12	13
Great Falls	1	1	2	9	0	0	0	0	0	0	8
Helena	0	0	0	0	0	0	0	0	0		2
Missoula	1	0	1	1	0	0	0	0	0		2
Idaho:											
Boise	1	2	1	1	0	0	1	0	0	0	3
Colorado:											
Denver	13	16	3	0	0	14	1	1	0	1	95
Pueblo	2	1	1	0	0	0	0	1	0	0	14
Arizona:											
Phoenix		1		0	0	13		0	0	0	26
Utah:											
Salt Lake City	3	5	3	0	0	1	0	0	0	5	32
Nevada:											
Reno	0	5	0	6	0	0	0	0	0	0	4
PACIFIC											
Washington:											
Seattle	9	13	2	8			1	0		0	
Spokane	4	1	8	1			0	0		1	
Tacoma	3	2	3	4	0	3	0	0	0	0	20
Oregon:											
Portland	6	7	4	17	0	4	0	2	0	11	
California:											
Los Angeles	16	36	2	50	1	13	2	2	0	15	236
Sacramento	2	1	0	4			0	1		31	
San Francisco	17	8	3	9	0	12	1	1	0	8	140

City reports for week ended February 14, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	2	2	1	1	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	5	1	12	5	0	0	1	1	2
New Jersey:									
Camden	0	0	0	1	0	0	0	0	0
Newark	0	0	1	0	0	0	0	0	0
Pennsylvania:									
Philadelphia	3	0	2	0	0	0	0	0	1
EAST NORTH CENTRAL									
Illinois:									
Chicago	0	0	1	0	0	0	0	1	0
Michigan:									
Detroit	4	0	4	3	0	0	1	0	0
Flint	0	0	0	0	0	0	0	1	1
Wisconsin:									
Milwaukee	1	1	0	0	0	0	0	1	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	0	0	1	0	0	0	0	0	0
Missouri:									
St. Louis	0	0	1	0	0	0	1	0	0
Kansas:									
Topeka	0	0	2	0	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	0	0	1	0	0	0	0	0
North Carolina:									
Raleigh	0	0	0	0	0	1	0	0	0
Georgia:									
Atlanta	0	0	0	0	0	1	0	0	0
Savannah	0	0	0	0	0	1	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock	1	0	0	0	0	1	0	0	0
Louisiana:									
New Orleans	0	0	0	0	0	1	0	1	0
Oklahoma:									
Oklahoma City	1	0	0	0	0	0	0	0	0
MOUNTAIN									
Colorado:									
Denver	0	1	0	0	0	0	0	0	0
Nevada:									
Reno	2	0	0	0	0	0	0	0	0
PACIFIC									
Oregon:									
Portland	0	0	0	1	0	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended February 14, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate

population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, December 7, 1924, to February 14, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14
Total	[2] 193	[3] 197	150	[3] 155	169	[4] 172	[4] 163	[5] 166	[6] 175	[6] 168
New England	[2] 208	221	189	258	256	179	171	199	191	246
Middle Atlantic	175	187	149	140	181	188	175	155	171	165
East North Central	167	185	134	151	132	141	130	[5] 135	145	132
West North Central	265	299	168	176	143	255	199	251	[7] 251	[7] 253
South Atlantic	201	150	134	146	173	[4] 106	[4] 138	128	[4] 153	[4] 183
East South Central	97	149	51	91	120	91	80	97	63	69
West South Central	209	195	116	148	144	195	162	148	176	162
Mountain	315	248	209	191	239	153	239	134	191	95
Pacific	273	[3] 207	226	[3] 129	194	206	223	293	270	180

MEASLES CASE RATES

	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14
Total	[2] 128	[3] 143	105	[3] 158	215	[4] 141	[4] 213	[5] 214	[6] 254	[6] 297
New England	[2] 282	194	278	380	395	440	497	484	576	661
Middle Atlantic	120	115	235	121	169	157	187	205	205	287
East North Central	207	317	138	294	417	127	379	[5] 373	453	515
West North Central	35	19	10	10	19	12	27	21	[7] 17	[7] 29
South Atlantic	39	24	35	53	83	[4] 43	[4] 38	37	[4] 49	[4] 98
East South Central	6	11	0	17	29	46	74	91	51	74
West South Central	0	19	14	9	5	23	14	14	37	51
Mountain	48	57	19	115	134	267	248	286	782	153
Pacific	125	[3] 37	70	[3] 83	194	160	55	17	61	29

SCARLET FEVER CASE RATES

	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14
Total	[2] 312	[3] 314	244	[3] 297	369	[4] 355	[4] 370	[5] 364	[6] 412	[6] 400
New England	[2] 602	552	512	609	661	561	596	534	614	564
Middle Atlantic	260	268	225	286	324	294	326	322	373	407
East North Central	234	311	230	243	383	375	369	[5] 379	426	397
West North Central	626	601	468	527	757	755	804	779	[7] 873	[7] 721
South Atlantic	252	213	132	203	160	[4] 243	[4] 189	185	[4] 255	[4] 277
East South Central	109	240	126	172	229	183	183	217	97	212
West South Central	162	185	65	83	148	116	195	204	162	121
Mountain	162	239	191	162	382	534	305	258	334	382
Pacific	218	[3] 134	133	[3] 138	189	183	220	226	258	177

SMALLPOX CASE RATES

	Dec. 13	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14
Total	[2] 43	[3] 42	41	[3] 40	57	[4] 58	[4] 70	[5] 67	[6] 76	[6] 79
New England	[2] 0	0	0	0	0	0	0	0	0	0
Middle Atlantic	1	2	2	3	3	10	6	9	2	4
East North Central	13	14	20	27	40	39	48	[5] 35	39	35
West North Central	255	209	205	129	220	193	180	195	[7] 147	[7] 195
South Atlantic	39	22	28	39	30	[4] 64	[4] 38	45	[4] 62	[4] 98
East South Central	177	314	183	372	395	217	675	652	823	675
West South Central	14	51	19	32	65	32	32	60	125	139
Mountain	19	29	48	48	29	57	95	48	29	162
Pacific	113	[3] 106	122	[3] 69	148	212	209	177	267	220

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Worcester, Mass., not included in calculating the rate. Report not received at time of going to press.
[3] Los Angeles, Calif., not included.
[4] Wilmington, Del., not included.
[5] Racine, Wis., not included.
[6] Fargo, N. Dak., and Wilmington, Del., not included.
[7] Fargo, N. Dak., not included.

Summary of weekly reports from cities, December 7, 1924, to February 14, 1925—Annual rates per 100,000 population—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Dec. 13	Dec 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14
Total	[2] 43	[3] 56	35	[3] 37	36	[4] 21	[4] 17	[5] 18	[6] 13	[6] 12
New England	[2] 16	30	17	25	15	25	20	7	30	20
Middle Atlantic	68	101	57	58	49	21	20	19	13	6
East North Central	32	33	24	28	23	23	11	[5] 10	8	6
West North Central	17	15	19	4	6	10	6	12	[7] 0	[7] 10
South Atlantic	35	30	37	41	55	[4] 21	[4] 11	37	[4] 17	[4] 21
East South Central	57	51	34	40	51	17	29	23	11	40
West South Central	51	56	28	37	70	70	42	60	23	46
Mountain	19	10	0	0	10	0	48	19	29	19
Pacific	17	[3] 14	15	[3] 5	26	6	15	3	17	12

INFLUENZA DEATH RATES

	Dec. 13	Dec 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14
Total	[2] 17	[3] 16	15	19	21	[4] 22	[4] 22	[5] 23	[6] 30	[6] 28
New England	[2] 5	15	15	3	17	27	10	27	47	27
Middle Atlantic	22	17	14	21	20	18	20	16	24	22
East North Central	13	9	16	10	16	15	18	[5] 12	13	17
West North Central	4	9	7	9	13	2	20	15	[7] 20	[7] 11
South Atlantic	22	22	14	26	35	[4] 47	[4] 23	39	[4] 49	[4] 55
East South Central	23	23	51	63	46	46	63	74	69	63
West South Central	36	41	15	51	41	87	92	82	97	122
Mountain	29	48	10	38	19	29	10	38	57	57
Pacific	4	[3] 17	12	12	20	12	12	20	41	4

PNEUMONIA DEATH RATES

	Dec. 13	Dec 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14
Total	[2] 159	[3] 172	157	203	192	[4] 215	[4] 211	[5] 206	[6] 225	[6] 222
New England	[2] 109	134	114	174	122	157	216	241	211	239
Middle Atlantic	201	191	178	226	228	260	234	230	253	231
East North Central	125	146	126	165	152	152	142	[5] 145	164	168
West North Central	88	68	92	101	90	107	120	118	[7] 135	[7] 139
South Atlantic	175	248	205	250	246	[4] 294	[4] 275	252	[4] 315	[4] 270
East South Central	217	297	206	303	292	189	320	303	326	320
West South Central	178	163	229	341	260	449	362	229	352	464
Mountain	200	276	219	229	229	248	324	315	191	277
Pacific	135	[3] 86	147	188	184	163	208	217	196	192

[2] Worcester, Mass., not included in calculating the rate. Report not received at time of going to press.
[3] Los Angeles, Calif., not included.
[4] Wilmington, Del , not included.
[5] Racine, Wis., not included
[6] Fargo, N. Dak., and Wilmington, Del , not included.
[7] Fargo, N. Dak., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,318,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

CHINA

Plague—Transbaikalia—Shansi Province—October, 1924.—Information reported to the North Manchuria Plague Prevention Service, received under date of January 19, 1925, shows that 3 cases of plague were reported, October 25, 1924, at Turga, a village situated on the Chita railroad half way between Borzia and Chita in Transbaikalia and 130 miles west of the Manchurian frontier. The source of infection had not been determined. By the end of October, the tarabagans, which are considered to be the source of plague infection in that region, should have gone inside their burrows to hibernate. Active measures were stated to have been taken to prevent spread. *Shansi Province.*—An outbreak of bubonic plague, with 790 deaths, was reported at Shing Hsien, Shansi Province, China, in October, 1924. A few cases of pneumonic plague were stated to have been observed, but the outbreak was bubonic in type. The area covered by these outbreaks is included between 35 and 42 degrees of North latitude.

CUBA

Report of smallpox in Matanzas, Cuba, in September, 1924, not confirmed.—Information has been received from the Director of Health of Cuba that the information on which was based the report of a case of smallpox in Matanzas, Cuba, during September, 1924, was incorrect, in that the case should have been reported as measles. The item appeared in the Public Health Reports October 24, 1924, page 2711, and in subsequent issues.

ESTHONIA

Smallpox—Typhoid fever and paratyphoid—Typhus fever—December, 1924.—During the month of December, 1924, two cases of smallpox, 96 cases of typhoid fever, 4 cases of paratyphoid fever, and 5 cases of typhus fever were reported in the Republic of Esthonia. Population, 1,107,059.

FINLAND

Lethargic encephalitis—Typhoid fever and paratyphoid fever—January 1-15, 1925.—During the period January 1 to 15, 1925, 2 cases of lethargic encephalitis, 28 of typhoid fever, and 36 of paratyphoid fever were notified in Finland.

INDIA

Epidemic smallpox—Rangoon, Burma, India.—Epidemic smallpox was reported present at Rangoon, India, February 21, 1925.

MEXICO

Epidemic meningitis—States of Guerrero and Morelos.—Information dated February 21, 1925, shows the presence of (cerebro) spinal meningitis in epidemic form in the States of Guerrero and Morelos, Mexico, with 37 recognized cases. The center of the epidemic prevalence was stated to be Iguala, 150 miles distant from Mexico City.

VIRGIN ISLANDS

Communicable diseases—January, 1925.—During the month of January, 1925, communicable diseases were reported in the Virgin Islands of the United States as follows:

Island and disease	Cases	Remarks
St. Thomas and St. John:		
Chancroid	1	Imported.
Dysentery	1	Unclassified.
Fish poisoning	1	
Gonorrhea	6	
Malaria	3	Benign tertian, 2; subtertian, 1; St. John, 1.
Syphilis	1	Secondary.
Trachoma	1	Imported.
Uncinariasis	1	Necator Americanus.
St. Croix:		
Chancroid	1	
Dysentery	2	Unclassified, 1; entamebic, 1.
Filariasis	14	
Gonorrhea	6	
Malaria	1	Estivo-autumnal
Syphilis	10	Primary, 1, secondary, 9.
Trachoma	1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended March 6, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo	Jan. 11-17	1	1	
India				Dec. 14-27, 1925: Cases, 4,512; deaths, 2,558.
Calcutta	Dec. 28-Jan. 3	5	5	
Do	Jan. 4-10	10	10	
Rangoon	do	4	3	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended March 6, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo	Jan. 11-17			One plague rodent.
China:				
Foochow	Dec. 28-Jan. 3			Reported present.
Nanking	Jan. 18-31			Present.
Shing Hsien	October, 1924		790	Shansi Province.
Egypt				Jan. 22-28, 1925: Cases, 1. Jan. 1-28, 1925: Cases, 15; corresponding period, 1924: Cases, 17.
India				Dec. 14-27, 1924: Cases, 5,589; deaths, 4,188.
Bombay	Jan. 4-10	1	1	
Karachi	Jan. 18-24	2	4	
Rangoon	Jan. 4-10	8	6	
Siberia:				
Transbaikalia—				
Turga	October, 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Jan. 4-10	1	1	

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Arabia:				
Aden	Jan. 25-31	1		Imported.
Canada:				
British Columbia—				
Vancouver	Feb. 8-14	21		
New Brunswick—				
Northumberland	do	1		County.
China:				
Amoy	Jan. 18-24			Present.
Foochow	Dec. 28-Jan. 27			Do.
Egypt:				
Alexandria	Jan. 8-14	1		
Esthonia				Dec. 1-31, 1924: Cases, 2.
Great Britain:				
Newcastle-on-Tyne	Feb. 1-7	3		
Greece:				
Saloniki	Nov. 11-Dec. 22	3		
India				Dec. 14-27, 1924: Cases, 2,790; deaths, 641.
Bombay	Jan. 4-10	6	3	
Calcutta	Dec. 21-Jan. 3	113	64	
Do	Jan. 4-10	82	43	
Rangoon	do	33	4	Feb. 21, 1925: Epidemic.
Iraq:				
Bagdad	Dec. 21-27	1		
Mexico:				
Tampico	Feb. 1-10	6	2	
Vera Cruz	Feb 2-15		7	
Portugal:				
Lisbon	Jan. 18-31	13		
Spain:				
Malaga	Feb. 1-7		7	
Syria:				
Aleppo	Jan. 25-31	5	1	Estimated.

TYPHUS

Place	Date	Cases	Deaths	Remarks
Chile:				
Concepcion	Jan 6-12		2	
Valparaiso	Jan. 18-31		2	
Egypt:				
Cairo	Dec. 9-16	2	1	
Esthonia				Dec. 1-31, 1924: Cases, 5.
Greece:				
Saloniki	Nov. 17-Dec. 15	3	2	
Portugal:				
Oporto	Feb. 1-7	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to February 27, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Nov. 29, 1924: Cases, 9; deaths, 8.
Colombo	Nov. 16-22	1		
India				Oct 19-Dec 13, 1924: Cases, 20,407; deaths, 12,343.
Bombay	Nov. 23-Dec 20	4	4	
Calcutta	Oct 26-Dec. 26	54	46	
Madras	Nov. 16-Jan. 3	69	40	
Do	Jan. 4-17	54	34	
Rangoon	Nov 9-Dec 20	9	2	
Indo-China				Aug 1-Sept 30, 1924: Cases, 14; deaths, 10.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug 1-Sept. 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov 30-Dec 6	1		
Siam:				
Bangkok	Nov 9-29	4	2	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov 25			Present with several cases.
Feteira	do	1		
St Michael Island	Nov. 2-Jan 3	30	13	
British East Africa				
Tanganyika Territory	Nov. 23-29	3		
Uganda	Sept-Oct, 1924	101	91	
Uganda	Aug 1-31	79	62	
Canary Islands				
Las Palmas				Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec 26	3	1	Vicinity of Santa Cruz de Teneriffe
Teneriffe—				
Santa Cruz	Jan 3	1		In vicinity.
Celebes:				
Macassar	Oct 29			Epidemic
Ceylon:				
Colombo	Nov 9-Jan 3	12	9	
Do	Jan 4-10	1	3	
China:				
Nanking	Nov 23-Jan. 17			Present.
Ecuador:				
Chimborazo Province—				
Alausi District	Jan 14		14	At two localities on Guayaquil and Quito Railway
Guayaquil	Nov 16-Dec 31	9	3	Rats taken, 27,004, found infected, 92
Do	Jan 1-15	6	4	Rats taken, 8,248; rats found infected, 28.
Egypt				Year 1924. Cases, 378. Jan. 1-14, 1925. Cases, 13.
City—				
Alexandria	Year 1924	2	2	Last case, Nov. 26
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec. 7.
Suez	do	20	13	Last case, Dec. 20.
Province—				
Dakhalia	Jan. 1-8	1	1	
Kalioubiah	do	3		
Menoufieh	do	7	3	
Gold Coast				Sept.-Oct., 1924; Deaths, 42.
Hawaii:				
Honokaa	Nov. 4	1		Plague-infected rodents found Dec. 9, 1924, and Jan. 15, 1925.
India				Oct. 19-Dec. 13, 1924: Cases, 19,780; deaths, 14,942.
Bombay	Nov. 22-Jan. 3	4	3	
Karachi	Nov. 30-Dec. 6	2	1	
Do	Jan 4-17	8	5	
Madras Presidency	Nov. 23-Dec. 20	528	379	
Rangoon	Oct. 26-Jan. 3	26	25	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to February 27, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 25; deaths, 20.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Japan	Aug. 10-Nov 15	12		
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri; epidemic.
Pare	Nov. 20			Do.
Soerabaya	Nov. 16-Dec. 13	53	55	
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov. 18-24		13	
Pekalongan	Oct. 14-Nov. 3		29	
Do	Nov. 18-24		13	
Tegal	Oct 14-Nov. 24		10	
Madagascar				Nov. 1 Dec 15, 1924: Cases, 254; deaths, 218.
Provinces—				
Itasy	Nov. 1-Dec. 15	4	2	
Moramanga	do	49	34	
Tananarive	Oct. 16-Dec 15	223	208	Tananarive City (interior), Oct. 16-Nov. 30. Cases, 8; deaths, 7.
Towns (ports)—				
Fort Dauphin	Nov. 1-Dec. 15	12	5	
Majunga	Nov. 1-30	1	1	
Tamatave	do	1	1	
Mauritius Island				Sept 7-Oct. 18, 1924: Cases, 60; deaths, 53
Nigeria				Aug. - Oct, 1924: Cases, 309; deaths, 256.
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Turkey:				
Constantinople	Jan. 9-15	5	5	
Union of South Africa:				
Cape Province—				
De Aar	Nov. 22-Jan. 3	4	1	Native
Dronfield	Dec. 7-13	1		8 miles from Kimberley.
Kimberley	Dec. 7-27	3	2	
Maraisburg District	Nov. 22-Dec. 13	4	2	Bubonic, on Goedshoop Farm.
Orange Free State—				
Bloemfontein District	Dec. 21-Jan. 3.	5	2	
Ficksburg District	Dec. 28-Jan. 3	1	1	
Hoopstad District	Dec. 7-13	1		On farm.
Kroonstad District	Nov. 22-Jan. 3	2	1	
Philippolis District	Dec. 21-27	1		
Vredefort	Dec. 7-20	2	2	On farms.
Transvaal—				
Boshof District	Dec. 7-Jan. 3	3	3	On farm.
Wolmaransstad District.	Nov. 22-29	1	1	On Farm Wolverspruit, Vaal River. Native.
On vessel:				
S. S. Conde				At Marseille, France, Nov. 6, 1924 Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Algeria				July 1-Dec. 20, 1924: Cases, 372.
Bolivia:				
La Paz	Nov. 1-Dec. 31	20	11	
Brazil:				
Pernambuco	Nov 9-Jan. 3	100	27	
British East Africa:				
Uganda—				
Entebbe	Oct. 1-31	4		
British South Africa:				
Northern Rhodesia	Oct. 28-Dec. 15	57	2	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to February 27, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Canada:				
British Columbia—				
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-Feb. 7	114		
Victoria	Jan 18-Feb. 7	2		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan 4-Feb. 14	29		
New Brunswick—				
Bonaventure and Gaspe Counties	Jan 1-31	1		
Ontario				Nov 30-Dec 27, 1924: Cases, 33.
Hamilton	Jan. 24-30	1		Dec. 28, 1924, to Jan. 31, 1925: Cases, 27.
Ceylon				July 27-Nov. 29, 1924: Cases, 27; deaths, 1.
China:				
Amoy	Nov. 9-Jan. 3			Present.
Antung	Nov 17-Dec 28	5		
Do	Jan. 5-18	4		
Foochow	Nov. 2-Dec. 27			Do.
Hongkong	Nov 9-Dec. 6	5	1	
Nanking	Jan. 4-17			Do.
Shanghai	Dec. 7-27	1	2	
Czechoslovakia				Apr.-June, 1924. Case, 1; occurring in Province of Moravia.
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt.				
Alexandria	Nov. 12-Dec. 31	10		
France				July-Nov., 1924: Cases, 69.
Germany				June 29-Nov. 8, 1924. Cases, 7.
Gibraltar	Dec 8-14	1		
Gold Coast				July-Sept, 1924: Cases, 82; deaths, 1.
Great Britain:				
England and Wales	Nov 23-Jan 3	472		
Do	Jan 4-24	351		
Greece				Jan.-June, 1924: Cases, 170; deaths, 27.
Do				July-Nov, 1924: Cases, 36; deaths, 26
India				Oct 19-Dec. 6, 1924. Cases, 7,881; deaths, 1,745.
Bombay	Nov. 2-Jan 3	30	18	
Calcutta	Oct. 26-Jan 3	307	170	
Karachi	Nov. 16-Jan 3	16	2	
Do	Jan. 4-17	13		
Madras	Nov. 16 Jan. 3	122	48	
Do	Jan 4-17	28	15	
Rangoon	Oct. 26-Jan 3	86	28	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 223; deaths, 76.
Province—				
Anam	Aug. 1-Sept 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov. 16-Dec 27	11	5	Including 100 sq km. of surrounding country
Tonkin	Aug. 1-Sept. 30	19	7	
Iraq:				
Bagdad	Nov. 9-15	1	1	
Italy				June 29-Dec. 6, 1924 Cases, 61.
Jamaica				Nov 30-Jan. 3: Cases, 50. Reported as alastrim.
Do				Jan 4-31, 1925: Cases, 43. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim.
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Java.				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in two native villages.
Soerabaya	Oct. 19-Dec. 20	613	197	
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov 14	2		
Do	Dec. 20-Jan. 2	19	4	
Cheribon	Oct. 14-Nov. 24	15		
Pekalongan	do	22		
Preanger	Nov. 18-24	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to February 27, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5.
Mexico				
Durango	Dec. 1-31		5	
Do	Jan 1-31		5	Town and district.
Guadalajara	Dec. 23-29		1	
Do	Jan 6-12		1	
Mexico City	Nov. 23-Dec 27	5		
Do	Jan 11-31	5		
Monterey				Jan 24, 1925. Outbreak.
Salina Cruz	Dec 1-31	1	1	
Tampico	Dec. 11-31	5	4	
Do	Jan 1-31	17	6	
Vera Cruz	Dec. 1-Jan 3		10	
Do	Jan. 5-Feb 1		18	
Villa Hermosa	Dec. 28-Jan. 10			Present Locality, capital, State of Tabasco
Nigeria				Jan.-June, 1924: Cases, 357; deaths, 87
Do				July-Oct, 1924; Cases, 10; deaths, 2.
Peru:				
Arequipa	Nov 24-30		1	
Poland				Sept 21-Nov 29, 1924: Cases, 19 deaths, 2
Portugal.				
Lisbon	Dec 7-Jan 3	17		
Do	Jan 4-17	26		
Oporto	Nov 30-Dec 27	3	2	
Do	Jan. 11-17	1		
Russia				Jan-June, 1924: Cases, 9,683, July-Sept, 1924 Cases, 1,251.
Siam:				
Bangkok	Dec 28-Jan. 3	1	1	
Spain:				
Barcelona	Nov. 27-Dec 31		5	
Cadiz	Nov. 1-Dec 31		51	
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan 3		97	
Do	Jan. 4-31		51	
Valencia	Nov. 30-Dec 6	2		
Switzerland:				
Lucerne	Nov. 1-Dec. 31	19		
Syria:				
Aleppo	Nov. 23-Dec 27	13		
Do	Jan 4-24	25	6	
Damascus	Jan. 6-13	2		
Tunis:				
Tunis	Nov. 25-Dec 29	42	35	
Do	Jan. 1-14		29	
Do	Jan. 22-Feb 4		32	
Turkey				
Constantinople	Dec. 13-19	5		
Union of South Africa				Nov 1-30, 1924: Cases, 7.
Cape Province	Nov. 9-Jan 3			Outbreaks.
Orange Free State	Nov. 2-8			Do
Transvaal	Nov. 9-Dec. 20			Do.
Uruguay				Jan.-June, 1924: Cases, 101; deaths, 2.
Do				July, 1924: Cases, 25; deaths, 3.
On vessel.				
S. S. Habana		1		At Santiago de Cuba, from Kingston, Jamaica.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924. Cases, 101; deaths, 14.
Algiers	Nov. 1-Dec. 31	5	1	
Bolivia:				
La Paz	do.	3		
Bulgaria				Jan.-June, 1924 Cases, [illegible]; deaths, 28.
Do				July-Oct, 1924. Cases, 5.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to February 27, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Iquique	Nov. 30-Dec. 1		2	
Talcahuano	Nov 16-Dec. 20		5	
Do	Jan. 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-17		2	
Chosen:				
Seoul	Nov. 1-30	1	1	
Egypt:				
Alexandria	Dec. 3-9	1	1	
Cairo	Oct 1-Nov. 18	10	7	
France				July-Oct., 1924: Cases, 7.
Gold Coast				Oct. 1-31, 1924: 1 case.
Greece				May-June, 1924: Cases, 116; deaths, 8.
Do				July-Nov., 1924: Cases, 35; deaths, 4.
Japan				Aug. 1-Nov. 15, 1924: Cases, 2.
Latvia				Oct.-Nov., 1924. Cases, 16.
Lithuania				Aug.-Oct., 1924: Cases, 15; deaths, 1.
Mexico:				
Durango	Dec. 1-31		1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District.
Do	Jan. 11-31	29		Do.
Palestine				Nov. 12-Dec. 8, 1924: Cases, 7.
Ekron	Dec. 23-29	1		
Jerusalem	do	2		
Do	Jan 20-26	1		
Mikveh Israel	do	1		
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept. 28-Nov. 15, 1924: Cases, 232; deaths, 17.
Portugal:				
Lisbon	Dec. 29-Jan. 4		2	
Oporto	Jan. 4-10	1		
Rumania				Jan-June, 1924: Cases, 2,906; deaths, 328.
Do				July-Aug., 1924: Cases, 89; deaths, 12.
Constanza	Dec. 1-10	1		
Russia				Jan 1-June 30, 1924: Cases, 92,000. July-Sept., 1924: Cases; 5,225.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Sweden:				
Goteborg	Jan. 18-24	1		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Turkey:				
Constantinople	Nov. 15-Dec. 19	6	1	
Do	Jan. 2-22	6		
Union of South Africa:				
Cape Province	Nov. 1-30	89	16	Dec. 21-Jan. 3: Outbreaks.
East London	Nov. 16-22	1		
Natal	Nov. 1-30	105	45	Dec. 14-20: Outbreaks.
Orange Free State	do	21	2	Dec. 7-Jan. 3: Outbreaks.
Transvaal	do	18	3	
Yugoslavia				Aug 3-Oct. 18, 1924: Cases, 17; deaths, 2.
Belgrade	Nov. 24-Dec. 7	4		

YELLOW FEVER

Gold Coast	Oct., 1924	3	3	

X

TREASURY DEPARTMENT

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ISSUED WEEKLY

BY THE UNITED STATES
PUBLIC HEALTH SERVICE

VOLUME 40 :: :: NUMBER 11

MARCH 13 - - 1925

SPECIAL ARTICLES

WASHINGTON
GOVERNMENT PRINTING OFFICE
1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of the public health.

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PUBLIC HEALTH REPORTS

VOL. 40 MARCH 13, 1925 NO. 11

THE PAN AMERICAN SANITARY CODE

INTERNATIONAL SANITARY CONVENTION SIGNED AT HABANA, CUBA, NOVEMBER 14, 1924

In executive session on February 23, 1925, the Senate of the United States ratified the international sanitary convention of the American Republics, which adopted the sanitary code printed below:

To the Senate:

With a view to receiving the advice and consent of the Senate to ratification, I transmit herewith an international sanitary convention signed on November 14, 1924, by the delegates of the United States and Latin-American Republics represented at the Seventh Pan American Sanitary Conference at Habana.

The attention of the Senate is invited to the accompanying report of the Secretary of State, and memorandum concerning the convention prepared by Surgeon General Cumming of the Public Health Service.

CALVIN COOLIDGE.

THE WHITE HOUSE,
Washington, February 7, 1925.

The PRESIDENT:

The undersigned, the Secretary of State, has the honor to lay before the President, with a view to its transmission to the Senate to receive the advice and consent of that body to ratification, if his judgment approve thereof, a copy duly authenticated by the Secretary of State of Cuba, of an international sanitary convention, signed in one original at Habana on November 14, 1924, by the delegates of the United States, the Argentine Republic, Brazil, Chile, Colombia, Costa Rica, Cuba, Salvador, Guatemala, Haiti, Honduras, Mexico, Panama, Paraguay, Peru, the Dominican Republic, Uruguay, and Venezuela, to the Seventh Pan American Sanitary Conference.

The convention was submitted to the Secretary of the Treasury, who has stated to me in writing his approval of it, and has furnished a memorandum concerning it prepared by Surgeon General Cumming of the Public Health Service, who was one of the delegates of the United States to the Habana conference, and a signer of the con-

vention. A copy of this memorandum is submitted for the information of the Senate.

Respectfully submitted.

CHARLES E. HUGHES.

DEPARTMENT OF STATE,
Washington, February 6, 1925.

THE PAN AMERICAN SANITARY CODE

The Presidents of Argentine, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Guatemala, Haiti, Honduras, Mexico, Salvador, Panama, Paraguay, Peru, United States of America, Uruguay, and Venezuela, being desirous of entering into a sanitary convention for the purpose of better promoting and protecting the public health of their respective nations, and particularly to the end that effective cooperative international measures may be applied for the prevention of the international spread of the communicable infections of human beings and to facilitate international commerce and communication, have appointed as their plenipotentiaries, to wit:

The Republic of Argentine:
- Dr. Gregorio Araoz Alfaro.
- Dr. Joaquin Llambias.

The United States of Brazil:
- Dr. Nascimento Gurgel.
- Dr. Raúl Almeida Magalhaes.

The Republic of Chile:
- Dr. Carlos Graf.

The Republic of Colombia:
- Dr. R. Gutiérrez Lee.

The Republic of Costa Rica:
- Dr. José Barela Zequeira.

The Republic of Cuba.
- Dr. Mario G. Lebredo.
- Dr. José A. López del Valle.
- Dr. Hugo Roberts.
- Dr. Diego Tamayo.
- Dr. Francisco M. Fernández
- Dr. Domingo F. Ramos.

The Republic of El Salvador:
- Dr. Leopoldo Paz.

The United States of America:
- Dr. Hugh S. Cumming.
- Dr. Richard Creel.
- Mr. P. D. Cronin.
- Dr. Francis D. Patterson.

The Republic of Guatemala:
Dr. José de Cubas y Serrate.
The Republic of Haiti:
Dr. Charles Mathon.
The Republic of Honduras:
Dr. Arístides Agramonte.
The Republic of Mexico:
Dr. Alfonso Pruneda.
The Republic of Panama:
Dr. Jaime de la Guardia.
The Republic of Paraguay:
Dr. Andrés Gubetich.
The Republic of Peru:
Dr. Carlos E. Paz Soldán.
The Dominican Republic:
Dr. R. Pérez Cabral.
The Republic of Uruguay:
Dr. Justo F. González.
The United States of Venezuela:
Dr. Enrique Tejera.
Dr. Antonio Smith.

Who, having exchanged their full powers, found in good and due form, have agreed to adopt, ad referendum, the following

Pan American Sanitary Code

Chapter I. *Objects of the Code and Definitions of Terms used Therein*

Article 1. The objects of this code are:

(*a*) The prevention of the international spread of communicable infections of human beings.

(*b*) The promotion of cooperative measures for the prevention of the introduction and spread of disease into and from the territories of the signatory Governments.

(*c*) The standardization of the collection of morbidity and mortality statistics by the signatory Governments.

(*d*) The stimulation of the mutual interchange of information which may be of value in improving the public health and combating the diseases of man.

(*e*) The standardization of the measures employed at places of entry for the prevention of the introduction and spread of the communicable diseases of man, so that greater protection against them shall be achieved and unnecessary hindrance to international commerce and communication eliminated.

Art. 2. Definitions: As herein used, the following words and phrases shall be taken in the sense hereinbelow indicated, except as a

different meaning for the word or phrase in question may be given in a particular article, or is plainly to be collected from the context or connection where the term is used.

Aircraft: Any vehicle which is capable of transporting persons or things through the air, including aeroplanes, seaplanes, gliders, heliocopters, airships, balloons, and captive balloons.

Area: A well-determined portion of territory.

Disinfection: The act of rendering free from the causal agencies of disease.

Fumigation: A standard process by which the organisms of disease or their potential carriers are exposed to a gas in lethal concentrations.

Index, *Aëdes aegypti:* The percentage ratio determined after examination between the number of houses in a given area and the number in which larvæ or mosquitoes of the Aëdes aegypti are found in a fixed period of time.

Inspection: The act of examining persons, buildings, areas, or things which may become capable of harboring, transmitting, or transporting the infectious agents of disease, or of propagating or favoring the propagation of such agents. Also the act of studying and observing measures put in force for the suppression or prevention of disease.

Incubation, period of: For plague, cholera, and yellow fever, each 6 days; for smallpox, 14 days; and for typhus fever, 12 days.

Isolation: The separation of human beings or animals from other human beings or animals in such manner as to prevent the interchange of disease.

Plague: Bubonic, septicemic, pneumonic, or rodent plague.

Port: Any place or area where a vessel or aircraft may seek harbor, discharge or receive passengers, crew, cargo, or supplies.

Rodents: Rats, domestic and wild, and other rodents.

Chapter II

SECTION 1. NOTIFICATION AND SUBSEQUENT COMMUNICATIONS TO OTHER COUNTRIES

Art. 3. Each of the signatory Governments agrees to transmit to each of the other signatory Governments and to the Pan American Sanitary Bureau, at intervals of not more than two weeks, a statement containing information as to the state of its public health, particularly that of its ports.

The following diseases are obligatorily reportable:

Plague, cholera, yellow fever, smallpox, typhus, epidemic cerebrospinal meningitis, acute epidemic poliomyelitis, epidemic lethargic encephalitis, influenza or epidemic la grippe, typhoid and paratyphoid fevers, and such other diseases as the Pan American Sanitary Bureau may by resolution add to the above list.

ART. 4. Each signatory Government agrees to notify adjacent countries and the Pan American Sanitary Bureau immediately by the most rapid available means of communication, of the appearance in its territory of an authentic or officially suspected case or cases of plague, cholera, yellow fever, smallpox, typhus, or any other dangerous contagion liable to be spread through the intermediary agency of international commerce.

ART. 5. This notification is to be accompanied or very promptly followed by the following additional information:

1. The area where the disease has appeared.
2. The date of its appearance, its origin, and its form.
3. The probable source or country from which introduced and manner of introduction.
4. The number of confirmed cases and number of deaths.
5. The number of suspected cases and deaths.
6. In addition, for plague, the existence among rodents of plague or of an unusual mortality among rodents; for yellow fever, the Aëdes aegypti index of the locality.
7. The measures which have been applied for the prevention of the spread of the disease and its eradication.

ART. 6. The notification and information prescribed in articles 4 and 5 are to be addressed to diplomatic or consular representatives in the capital of the infected country, and to the Pan American Sanitary Bureau at Washington, which shall immediately transmit the information to all countries concerned.

ART. 7. The notification and the information prescribed in articles 3, 4, 5, and 6 are to be followed by further communications in order to keep other Governments informed as to the progress of the disease or diseases. These communications will be made at least once weekly and will be as complete as possible, indicating in detail the measures employed to prevent the extension of the disease. The telegraph, the cable, and the radio will be employed for this purpose, except in those instances in which the data may be transmitted rapidly by mail. Reports by telegraph, cable, or radio will be confirmed by letter. Neighboring countries will endeavor to make special arrangements for the solution of local problems that do not involve widespread international interest.

ART. 8. The signatory Governments agree that in the event of the appearance of any of the following diseases, namely, cholera, yellow fever, plague, typhus fever, or other pestilential diseases in severe epidemic form in their territory they will immediately put in force appropriate sanitary measures for the prevention of the international carriage of any of the said diseases therefrom by passengers, crew, cargo, and vessels, and mosquitoes, rats, and vermin that may be carried thereon, and will promptly notify each of the other signatory

Governments and the Pan American Sanitary Bureau as to the nature and extent of the sanitary measures which they have applied for the accomplishment of the requirements of this article.

SECTION 2. PUBLICATION OF PRESCRIBED MEASURES

ART. 9. Information of the first nonimported case of plague, cholera, or yellow fever justifies the application of sanitary measures against an area where said disease may have appeared.

ART. 10. The Government of each country obligates itself to publish immediately the preventive measures which will be considered necessary to be taken by vessels or other means of transport, passengers, and crew at any port of departure or place located in the infected area. The said publication is to be communicated at once to the accredited diplomatic or consular representatives of the infected country and to the Pan American Sanitary Bureau. The signatory Governments also obligate themselves to make known in the same manner the revocation of these measures or of modifications thereof that may be made.

ART. 11. In order that an area may be considered to be no longer infected, it must be officially established:

1. That there has neither been a death nor a new case as regards plague or cholera for 10 days and as regards yellow fever for 20 days, either since the isolation or since the death or recovery of the last patient.

2. That all means for the eradication of the disease have been applied and, in the case of plague, that effective measures against rats have been continuously carried out and that the disease has not been discovered among them within six months; in the case of yellow fever, that Aëdes aegypti index of the infected area has been maintained at an average of not more than 2 per cent for the 30-day period immediately preceding, and that no portion of the infected area has had an index in excess of 5 per cent for the same period of time.

SECTION 3. MORBIDITY AND MORTALITY STATISTICS

ART. 12. The International Classification of the Causes of Death is adopted as the Pan American Classification of the Causes of Death, and shall be used by the signatory nations in the interchange of mortality and morbidity reports.

ART. 13. The Pan American Sanitary Bureau is hereby authorized and directed to republish from time to time the Pan American Classification of the causes of Death.

ART. 14. Each of the signatory Governments agrees to put in operation at the earliest practicable date a system for the collection and tabulation of vital statistics which shall include:

1. A central statistical office presided over by a competent official.
2. The establishment of regional statistical offices.
3. The enactment of laws, decrees, or regulations requiring the prompt reporting of births, deaths, and communicable diseases by health officers, physicians, midwives, and hospitals, and providing penalties for failure to make such reports.

ART. 15. The Pan American Sanitary Bureau shall prepare and publish standard forms for the reporting of deaths and cases of communicable disease and all other vital statistics.

CHAPTER III. *Sanitary Documents*

SECTION 1. BILLS OF HEALTH

ART. 16. The master of any vessel or aircraft which proceeds to a port of any of the signatory Governments is required to obtain at the port of departure and ports of call a bill of health, in duplicate, issued in accordance with the information set forth in the appendix and adopted as the standard bill of health.

ART. 17. The bill of health will be accompanied by a list of the passengers, and stowaways if any, which shall indicate the port where they embarked and the port to which they are destined, and a list of the crew.

ART. 18. Consuls and other officials signing or countersigning bills of health should keep themselves accurately informed with respect to the sanitary conditions of their ports and the manner in which this code is obeyed by vessels and their passengers and crews while therein. They should have accurate knowledge of local mortality and morbidity and of sanitary conditions which may affect vessels in port. To this end, they shall be furnished with information they request pertaining to sanitary records, harbors, and vessels.

ART. 19. The signatory Governments may assign medical or sanitary officers as public health attachés to embassies or legations and as representatives to international conferences.

ART. 20. If at the port of departure there be no consul or consular agent of the country of destination, the bill of health may be issued by the consul or consular agent of a friendly Government authorized to issue such bill of health.

ART. 21. The bill of health should be issued not to exceed 48 hours before the departure of the ship to which it is issued. The sanitary visa should not be given more than 24 hours before departure.

ART. 22. Any erasure or alteration of a bill of health shall invalidate the document, unless such alteration or erasure shall be made by competent authority and notation thereof appropriately made.

ART. 23. A clean bill of health is one which shows the complete absence in the port of departure of cholera, yellow fever, plague, typhus fever, or of other pestilential disease in severe epidemic form liable to be transported by international commerce. Provided, that the presence only of bona fide imported cases of such disease, when properly isolated, shall not compel the issuance of a foul bill of health, but notation of the presence of such cases will be made under the heading of "Remarks" on the bill of health.

ART. 24. A foul bill of health is one which shows the presence of nonimported cases of any of the diseases referred to in article 23.

ART. 25. Specific bills of health are not required of vessels which, by reason of accident, storm, or other emergency condition, including wireless change of itinerary, are obliged to put into ports other than their original destinations, but such vessels shall be required to exhibit such bills of health as they possess.

ART. 26. It shall be the duty of the Pan American Sanitary Bureau to publish appropriate information which may be distributed by port health officers for the purpose of instructing owners, agents, and masters of vessels as to the methods which should be put in force by them for the prevention of the international spread of disease.

SECTION 2. OTHER SANITARY DOCUMENTS

ART. 27. Every vessel carrying a medical officer will maintain a sanitary log which will be kept by him, and he will record therein daily: The sanitary condition of the vessel and its passengers and crew; a record showing the names of passengers and crew which have been vaccinated by him; name, age, nationality, home address, occupation, and nature of illness or injury of all passengers and crew treated during the voyage; the source and sanitary quality of the drinking water of the vessel, the place where taken on board, and the method in use on board for its purification; sanitary conditions observed in ports visited during the voyage; the measures taken to prevent the ingress and egress of rodents to and from the vessel; the measures which have been taken to protect the passengers and crew against mosquitoes, other insects, and vermin. The sanitary log will be signed by the master and medical officer of the vessel, and will be exhibited upon the request of any sanitary or consular officer. In the absence of a medical officer, the master shall record the above information in the log of the vessel, in so far as possible.

ART. 28. Equal or similar forms for quarantine declarations, certificate of fumigation, and certificate of vaccination set forth in the appendix are hereby adopted as standard forms.

Chapter IV. *Classification of Ports*

Art. 29. An infected port is one in which any of the following diseases exist, namely: Plague, cholera, yellow fever, or other pestilential disease in severe epidemic form.

Art. 30. A suspected port is a port in which or in the areas contiguous thereto a nonimported case or cases of any of the diseases referred to in article 23 have occurred within 60 days or which has not taken adequate measures to protect itself against such diseases, but which is not known to be an infected port.

Art. 31. A clean port, Class A, is one in which the following conditions are fulfilled:

1. The absence of nonimported cases of any of the diseases referred to in article 23 in the port itself and in the areas contiguous thereto.

2. (*a*) The presence of a qualified and adequate health staff.

(*b*) Adequate means of fumigation.

(*c*) Adequate personnel and material for the capture or destruction of rodents.

(*d*) An adequate bacteriological and pathological laboratory.

(*e*) A safe water supply.

(*f*) Adequate means for the collection of mortality and morbidity data.

(*g*) Adequate facilities for the isolation of suspects and the treatment of infectious diseases.

(*h*) Signatory Governments shall register in the Pan American Sanitary Bureau those places that comply with these conditions.

Art. 32. A clean port, Class B, is one in which the conditions described in article 31, 1 and 2 (*a*), above, are fulfilled, but in which one or more of the other requirements of article 31, 2, are not fulfilled.

Art. 33. An unclassified port is one with regard to which the information concerning the existence or nonexistence of any of the diseases referred to in article 23 and the measures which are being applied for the control of such diseases is not sufficient to classify such port.

An unclassified port shall be provisionally considered as a suspected or infected port, as the information available in each case may determine, until definitely classified.

Art. 34. The Pan American Sanitary Bureau shall prepare and publish at intervals a tabulation of the most commonly used ports of the Western Hemisphere, giving information as to sanitary conditions.

Chapter V. *Classification of Vessels*

Art. 35. A clean vessel is one coming from a clean port, Class A or B, which has had no case of plague, cholera, yellow fever, small-

pox, or typhus aboard during the voyage, and which has complied with the requirements of this code.

ART 36. An infected or suspected vessel is:

1. One which has had on board during the voyage a case or cases of any of the diseases mentioned in article 35.
2. One which is from an infected or suspected port.
3. One which is from a port where plague or yellow fever exists.
4. Any vessel on which there has been mortality among rats.
5. A vessel which has violated any of the provisions of this code.

Provided that the sanitary authorities should give due consideration in applying sanitary measures to a vessel that has not docked.

ART. 37. Any master or owner of any vessel, or any person violating any provisions of this code or violating any rule or regulation made in accordance with this code relating to the inspection of vessels, the entry or departure from any quarantine station, grounds, or anchorages, or trespass thereon, or to the prevention of the introduction of contagious or infectious disease into any of the signatory countries, or any master, owner or agent of a vessel making a false statement relative to the sanitary condition of a vessel, or its contents, or as to the health of any passenger or person thereon, or who interferes with a quarantine or health officer in the proper discharge of his duty or fails or refuses to present bills of health, or other sanitary document or pertinent information to a quarantine or health officer, shall be punished in accordance with the provisions of such laws, rules, or regulations as may be or may have been enacted or promulgated in accordance with the provisions of this code, by the Government of the country within whose jurisdiction the offense is committed.

CHAPTER VI. *The Treatment of Vessels*

ART. 38. Clean vessels will be granted pratique by the port health authority upon acceptable evidence that they properly fulfill the requirements of Article 35.

ART. 39. Suspected vessels will be subjected to necessary sanitary measures to determine their actual condition.

ART. 40. Vessels infected with any of the diseases referred to in article 23 shall be subjected to such sanitary measures as will prevent the continuance thereon and the spread therefrom of any of said diseases to other vessels or ports. The disinfection of cargo, stores, and personal effects shall be limited to the destruction of the vectors of disease which may be contained therein, provided that things which have been freshly soiled with human excretions capable of transmitting disease shall always be disinfected. Vessels on which there is undue prevalence of rats, mosquitoes, lice, or any other potential vector of communicable disease may be disinfected irrespective of the classification of the vessel.

ART. 41. Vessels infected with plague shall be subjected to the following treatment:

1. The vessel shall be held for observation and necessary treatment.

2. The sick, if any, shall be removed and placed under appropriate treatment in isolation.

3. The vessel shall be simultaneously fumigated throughout for the destruction of rats. In order to render fumigation more effective, cargo may be wholly or partially discharged prior to such fumigation, but care will be taken to discharge no cargo which might harbor rats,[1] except for fumigation.

4. All rats recovered after fumigation should be examined bacteriologically.

5. Healthy contacts, except those actually exposed to cases of pneumonic plague, will not be detained in quarantine.

6. The vessel will not be granted pratique until it is reasonably certain that it is free from rats and vermin.

ART. 42. Vessels infected with cholera shall be subjected to the following treatment:

1. The vessels shall be held for observation and necessary treatment.

2. The sick, if any, shall be removed and placed under appropriate treatment in isolation.

3. All persons on board shall be subjected to bacteriological examination and shall not be admitted to entry until demonstrated free from cholera vibrios.

4. Appropriate disinfection shall be performed.

ART. 43. Vessels infected with yellow fever shall be subjected to the following treatment:

1. The vessel shall be held for observation and necessary treatment.

2. The sick, if any, shall be removed and placed under appropriate treatment in isolation from Aëdes aegypti mosquitoes.

3. All persons on board nonimmune to yellow fever shall be placed under observation to complete six days from the last possible exposure to Aëdes aegypti mosquitoes.

4. The vessel shall be freed from Aëdes aegypti mosquitoes.

ART. 44. Vessels infected with smallpox shall be subjected to the following treatment:

1. The vessels shall be held for observation and necessary treatment.

---

[1] Explanatory footnote.—The nature of the goods or merchandise likely to harbor rats (plague suspicious cargo), shall, for purpose of this section, be deemed to be the following, namely. Rice or other grain (exclusive of flour); oilcake in sacks; beans in mats or sacks; goods packed in crates with straw or similar packing material; matting in bundles; dried vegetables in baskets or cases; dried and salted fish; peanuts in sacks; dry ginger; curios, etc., in fragile cases; copra; loose hemp in bundles; coiled rope in sacking kapok; maize in bags; sea grass in bales; tiles, large pipes, and similar articles; and bamboo poles in bundles.

2. The sick, if any, shall be removed and placed under appropriate treatment in isolation.

3. All persons on board shall be vaccinated. As an option the passengers may elect to undergo isolation to complete 14 days from the last possible exposure to the disease.

4. All living quarters of the vessels shall be rendered mechanically clean and used clothing and bedding of the patient disinfected.

ART. 45. Vessels infected with typhus shall be subjected to the following treatment:

1. The vessel shall be held for observation and necessary treatment.

2. The sick, if any, shall be removed and placed under appropriate treatment in isolation from lice.

3. All persons on board and their personal effects shall be deloused.

4. All persons on board who have been exposed to the infection shall be placed under observation to complete 12 days from the last possible exposure to the infection.

5. The vessel shall be deloused.

ART. 46. The time of detention of vessels for inspection or treatment shall be the least consistent with public safety and scientific knowledge. It is the duty of port health officers to facilitate the speedy movement of vessels to the utmost compatible with the foregoing.

ART. 47. The power and authority of quarantine will not be utilized for financial gain, and no charges for quarantine services will exceed actual cost plus a reasonable surcharge for administrative expenses and fluctuations in the market prices of materials used.

CHAPTER VII. *Fumigation Standards*

ART. 48. Sulphur dioxide, hydrocyanic acid, and cyanogen chloride gas mixture shall be considered as standard fumigants when used in accordance with the table set forth in the appendix as regards hours of exposure and of quantities of fumigants per 1,000 cubic feet.

ART. 49. Fumigation of ships to be most effective should be performed periodically and preferably at six months' intervals, and should include the entire vessel and its lifeboats. The vessel should be free of cargo.

ART. 50. Before the liberation of hydrogen cyanide or cyanogen chloride, all personnel of the vessel will be removed, and care will be observed that all compartments are rendered as nearly gas tight as possible.

CHAPTER VIII. *Medical Officers of Vessels*

ART. 51. In order to better protect the health of travelers by sea, to aid in the prevention of the international spread of disease, and to facilitate the movement of international commerce and communication, the signatory Governments are authorized in their discretion to license physicians employed on vessels.

ART. 52. It is recommended that license not issue unless the applicant therefor is a graduate in medicine from a duly chartered and recognized school of medicine, is the holder of an unrepealed license to practice medicine, and has successfully passed an examination as to his moral and mental fitness to be the surgeon or medical officer of a vessel. Said examination shall be set by the directing head of the national health service and shall require of the applicant a competent knowledge of medicine and surgery. Said directing head of the national health service may issue a license to an applicant who successfully passes the examination, and may revoke said license upon conviction of malpractice, unprofessional conduct, offenses involving moral turpitude, or infraction of any of the sanitary laws or regulations of any of the signatory Governments based upon the provisions of this code.

ART. 53. When duly licensed as aforesaid, said surgeons or medical officers of vessels may be utilized in aid of inspection as defined in this code.

CHAPTER IX. *The Pan American Sanitary Bureau*

FUNCTIONS AND DUTIES

ART. 54. The organization, functions, and duties of the Pan American Sanitary Bureau shall include those heretofore determined for the International Sanitary Bureau by the various international sanitary and other conferences of American Republics, and such additional administrative functions and duties as may be hereafter determined by Pan American sanitary conferences.

ART. 55. The Pan American Sanitary Bureau shall be the central coordinating sanitary agency of the various member Republics of the Pan American Union and the general collection and distribution center of sanitary information to and from said Republics. For this purpose it shall, from time to time, designate representatives to visit and confer with the sanitary authorities of the various signatory Governments on public health matters, and such representatives shall be given all available sanitary information in the countries visited by them in the course of their official visits and conferences.

ART. 56. In addition, the Pan American Sanitary Bureau shall perform the following specific functions:

To supply to the sanitary authorities of the signatory Governments through its publications, or in other appropriate manner, all available information relative to the actual status of the communicable diseases of man, new invasions of such diseases, the sanitary measures undertaken, and the progress effected in the control or eradication of such diseases; new methods for combating disease; morbidity and mortality statistics; public health organization and administration; progress in any of the branches of preventive medicine; and other pertinent information relative to sanitation and public health in any of its phases, including a bibliography of books and periodicals on public hygiene.

In order to more efficiently discharge its functions, it may undertake cooperative epidemiological and other studies; may employ at headquarters and elsewhere experts for this purpose; may stimulate and facilitate scientific researches and the practical application of the results therefrom; and may accept gifts, benefactions, and bequests, which shall be accounted for in the manner now provided for the maintenance funds of the Bureau.

ART. 57. The Pan American Sanitary Bureau shall advise and consult with the sanitary authorities of the various signatory Governments relative to public health problems and the manner of interpreting and applying the provisions of this code.

ART. 58. Officials of the National Health Services may be designated as representatives, ex-officio, of the Pan American Sanitary Bureau, in addition to their regular duties, and when so designated they may be empowered to act as sanitary representatives of one or more of the signatory Governments when properly designated and accredited to so serve.

ART. 59. Upon request of the sanitary authorities of any of the signatory Governments, the Pan American Sanitary Bureau is authorized to take the necessary preparatory steps to bring about an exchange of professors, medical and health officers, experts or advisers in public health of any of the sanitary sciences, for the purpose of mutual aid and advancement in the protection of the public health of the signatory Governments.

ART. 60. For the purpose of discharging the functions and duties imposed upon the Pan American Sanitary Bureau, a fund of not less than $50,000 shall be collected by the Pan American Union, apportioned among the signatory Governments on the same basis as are the expenses of the Pan American Union.

Chapter X. *Aircraft*

Art. 61. The provisions of this convention shall apply to aircraft, and the signatory Governments agree to designate landing places for aircraft which shall have the same status as quarantine anchorages.

Chapter XI. *Sanitary Convention of Washington*

Art. 62. The provisions of articles 5, 6, 13, 14, 15, 16, 17, 18, 25, 30, 32, 33, 34, 37, 38, 39, 40, 41, 42, 43, 44, 45, 49, and 50 of the Pan American Sanitary Convention concluded in Washington on October 14, 1905, are hereby continued in full force and effect, except in so far as they may be in conflict with the provisions of this convention.

Chapter XII

Be it understood that this code does not in any way abrogate or impair the validity or force of any existing treaty, convention, or agreement between any of the signatory Governments and any other Government.

Chapter XIII. *Transitory Disposition*

Art. 63. The Governments which may not have signed the present convention are to be admitted to adherence thereto upon demand, notice of this adherence to be given through diplomatic channels to the Government of the Republic of Cuba.

Made and signed in the city of Habana, on the 14th day of the month of November, 1924, in two copies, in English and Spanish, respectively, which shall be deposited with the Department of Foreign Relations of the Republic of Cuba, in order that certified copies thereof, in both English and Spanish, may be made for transmission through diplomatic channels to each of the signatory Governments.

By the Republic of Argentine:

Gregorio Araoz Alfaro.
Joaquin Llambias.

By the United States of Brazil:

Nascimento Gurgel.
Raul Almeida Magalhaes.

By the Republic of Chile:

Carlos Graf.

By the Republic of Colombia:

R. Gutierrez Lee.

By the Republic of Costa Rica:

Jose Varela Zequeira.

By the Republic of Cuba:

MARIO G. LEBREDO.
JOSE A. LOPEZ DEL VALLE.
HUGO ROBERTS.
DIEGO TAMAYO.
FRANCISCO M. FERNANDEZ.
DOMINGO F. RAMOS.

By the Republic of El Salvador:

LEOPOLDO PAZ.

By the United States of America:

HUGH S. CUMMING.
RICHARD CREEL.
P. D. CRONIN.

By the Republic of Guatemala:

JOSE DE CUBAS Y SERRATE

By the Republic of Haiti:

CHARLES MATHON.

By the Republic of Honduras:

ARISTIDES AGRAMONTE.

By the Republic of Mexico:

ALFONSO PRUNEDA.

By the Republic of Panama:

JAIME DE LA GUARDIA.

By the Republic of Paraguay:

ANDRES GUBETICH.

By the Republic of Peru:

CARLOS E. PAZ SOLDAN.

By the Dominican Republic:

R. PEREZ CABRAL.

By the Republic of Uraguay:

JUSTO F. GONZALEZ.

By the United States of Venezuela:

ENRIQUE TEJERA.
ANTONIO SMITH.

Appendix

Table I.—*Quantities per 1,000 cubic feet*

Chemicals	Sulphur dioxide				Hydrocyanic acid				Cyanogen chloride mixture			
	Mosquitoes	Rats	Lice	Bedbugs	Mosquitoes	Rats	Lice	Bedbugs	Mosquitoes	Rats	Lice	Bedbugs
	Lbs.	*Lbs.*	*Lbs.*	*Lbs.*	*Oz.*	*Oz.*	*Oz.*	*Oz.*	*Oz.*	*Oz.*	*Oz.*	*Oz.*
Sulphur	2	3	4	3								
Sodium cyanide					½	5	10	5	½	4	8	4
Sulphuric acid					½	5	10	5				
Sodium chlorate									¼	2	4	2
Hydrochloric acid									2⅛	17	34	17
Water					1¼	12½	25	12½	2⅛	17	34	17

Table II.—*Hours of exposure*

	Hours
Sulphur dioxide:	
Mosquitoes	1
Rats	6
Lice	6
Bedbugs	6
Hydrocyanic acid:	
Mosquitoes	½
Rats	2
Lice	2
Bedbugs	2
Cyanogen chloride mixture:	
Mosquitoes	½
Rats	1½
Lice	1½
Bedbugs	1½

Serial No.

--Health Service.

------------------------Quarantine Station------------------------

Certificate of Vaccination Against Smallpox

Name-- Sex---------------------

Age---Date of Vaccination---

Height---------------------------------------Date of Reaction---

Result:

Immune Reaction.

Vaccinoid.

Successful Vaccination.

--- *Signed*---

(Signature) *Medical officer in Charge.*

--Health Service.

Certificate of Discharge from National Quarantine

-------------------------------Quarantine Station,

Port of---

---, 192

I certify that the-------------------------------------of-------------------, from------------------ bound for---------------------, has in all respects complied with the quarantine regulations prescribed under the authority of the laws of---------------------, and the Pan American Sanitary Code, and that the

(Country)

vessel, cargo, crew, and passengers are, to the best of my knowledge and belief, free from quarantinable diseases or danger of conveying the same. Said vessel is this day granted {free / provisional} pratique.

1. Rat guards of an accepted design to be placed on all lines leading from the vessels.
2. Gangways to be raised at night, or lighted and watched.
3. Vessels to be fumigated after discharge of cargo.

Quarantine Officer.

--Health Service

Certificate of Fumigation

(Not to be taken up by port authorities)

Port of ....

...................., 192

This is to certify that the .... from .... has been fumigated at this station for the destruction of .... as follows:

	Cubic capacity	Kilos or pounds sulphur	Grams or ounces cyanide	Grams or ounces cyanide and sodium chlorate	
Holds 1					Date
2					Duration of exposure
3					
4					Evidence of rats before fumigation
5					
Engine-room and shaft alley					Rats after fumination: living,
Bunkers					........, dead
Forepeak					
Forecastle					Inspection made by
Steerage					
Dining saloon (first cabin)					Opened by
Pantry (first cabin)					Dunnage or other protection to rats; how treated prior to
Galley					fumigation
Second cabin					
Second cabin pantry					
Provision storeroom					
Living quarters					
Staterooms					
Smoking room					
Total					

....

Quarantine Officer.

On the reverse side make a report of all compartments which were not fuminated, why they were not, and give treatment. Also report any other pertinent information

Quarantine Declaration

.... Quarantine Station

...................................., 192

Name of vessel....................; destination....................; nationality....................; rig....................; tonnage....................; date of arrival....................; port of departure ....; intermediate ports....................; days from port of departure ....; days from last port....................; previous ports of departure and call ....; officers and crew....................; cabin passengers....................; steerage passengers....................; total number of persons on board....................; cargo...................., ballast (tons)....................; character of....................; source..................... If water ballast, were tanks filled at the port of departure or at sea?....................
In ports of departure and call, did vessel lie at wharf or at moorings in harbor or roadstead?....................
If vessel lay at moorings, how far from shore?....................
Was there communication with the shore?.................... What changes in the personnel of the crew, if any?....................

Sickness, cases of, in port of departure. No....................; result....................
in intermediate ports. No....................; result....................
at sea. No....................; result....................

Were the sick sent to hospital or allowed to remain on board?....................
Was the bedding and clothing of those sick at sea frequently aired and washed?....................
Do you know of any circumstances affecting the health of the crew, or which render the ship dangerous to the health of any port of.................... If so, state them....................
(Country)

I certify that the foregoing statements, and the answers to the questions, are true to the best of my knowledge and belief.

Master....................
Ship's Surgeon....................
Vessel....................

Treatment of vessel ....;
(Inspected and passed or detained)
disinfection of hold ....; cabin and forecastle ....; bedding, clothing,
(Method) (Method)
etc ....
(Method)
Detained ....days, sickness in quarantine ....;
(Number of cases and nature)
discharge in free pratique ....; port named in certificate of discharge ....

Quarantine Officer.

INTERNATIONAL STANDARD FORM BILL OF HEALTH

INFORMATION CONCERNING THE VESSEL

I .... (official title) .... (the person authorized to issue the bill, at the port of ....) do hereby state that the vessel hereinafter named clears (or leaves) from the port of .... under the following circumstances: Name of vessel ....; nationality ....; master ....; tonnage, gross ....; net ....; name of medical officer ....; number of officers ....; of crew, including petty officers ....; officers' families ....; passengers destined for .... embarking at this port ....; first cabin ....; second
(Country of destination)
cabin ....; steerage ....; total number of passengers on board ....
Ports visited within preceding four months ....
Location of vessel while in port—wharf ....; open bay ....; distance from shore ....;
If any passengers or members of crew disembarked on account of sickness, state disease ....;
Time vessel was in port (date and hour of arrival) ....; (date and hour of departure) ....;
Character of communication with shore ....
Sanitary condition of vessel ....
Sanitary measures, if any, adopted while in port ....
Date of last fumigation for the destruction of rodents ....
Number of rodents obtained ....
Port where fumigated .... and officials supervising the fumigation ....
....
Method of fumigation used (for rodents) ....;
(for mosquitoes) ....

INFORMATION CONCERNING THE PORT

Sanitary conditions of port and vicinity ....
Prevailing diseases at port and vicinity ....

Number of cases and deaths from the following-named diseases during the two weeks ending ....

Diseases	Number of cases [1]	Number of deaths [1]	Remarks (any conditions affecting the public health existing in the port or vicinity to be here stated)
Yellow fever	....	....	
Asiatic cholera	....	....	
Cholera nostras or cholerine	....	....	
Smallpox	....	....	
Typhus fever	....	....	
Plague	....	....	
Leprosy	....	....	

[1] When there are no cases or deaths, entry to that effect must be made.

Health Office of the port of .... (when practicable this certificate should be signed by the health officer of the port).
Date of last case of:
Cholera ....
Yellow fever ....
Human plague ....
Typhus ....
Rodent plague ....
Measures, if any, imposed by the municipality against rats during the last six months ....

Signature of Port Health Officer.

I certify that the vessel has complied with the rules and regulations made under the terms of the Pan American Sanitary Code, and with the laws and regulations of the country of destination. The vessel leaves this port bound for..................., via...................

Given under my hand and seal this..................day of..................., 192....

(Signature of consular officer)..

....

[SEAL.]

Countersigned by

....

Medical Officer.

DRAINAGE DITCHES COVERED ECONOMICALLY

Concrete Pipe Manufactured and Laid Cheaply in Emporia, Va.

By George S. Bote, Scientific Assistant, United States Public Health Service

In 1916 the town of Emporia, Va., with a population of only 2,018 people, carried out an extensive drainage project, digging about 6½ miles of new ditches and widening and deepening a number of the old ones. This work was brought about by the presence of annoying mosquitoes and the prevalence of malaria in the town, and by a determination of the citizens and the town and county officials to rid the community of these pests and this disabling malady. It was the first project of this kind undertaken by a small municipality in Virginia.

In all, approximately 9 miles of ditches were completed and placed under mosquito control. They have been cleaned several times each year, and a regular weekly oiling schedule has been maintained throughout the mosquito season. The reduction in mosquitoes and malaria has been quite pronounced in the years that have followed, and the people have enjoyed greater comfort and better health.

The ditches were located on property lines wherever practicable. When first completed, eight years ago, they had gradually sloping sides with narrow bottoms, this form being considered the best type of drainage ditches for mosquito control. They receive all street drainage and all waste water, other than sewage, from the town of Emporia.

In this section of Virginia the top soil is loam, the subsoil is sand for several feet, and the next lower stratum is gravel or blue clay. Gradually the banks of the ditches have caved in and the bottoms have widened. Many of them are now twice their original size, and, as they pass through both the business and residential sections, they mar the landscape and depreciate, to some extent, the value of the property; but their net advantage from the standpoint of mosquito control and health is fully recognized. Then, too, the maintenance cost on these ditches has progressively increased, owing to caving and consequent obstructions. In some places fences on property lines have fallen in. When, during the cleaning process, the oil-

soaked mud was thrown out on the banks near the sidewalks which cross these ditches, some of the citizens became alarmed and censured the health officials for permitting such practice. Of course the mud was harmless, but because of its unsightliness considerable unfavorable comment was heard each time the ditches were cleaned. The sanitary officer received the brunt of the complaints.

Greensville County and the town of Emporia have been cooperating with the State board of health and the United States Public Health Service in providing funds for the employment of a full-time sanitary officer, who has conducted a campaign for better health in the town and county during the past five years and who is still so occupied. This plan of work was inaugurated in July, 1919. Visits are made at intervals by a representative of the State board of health and the Public Health Service to consult with the local authorities and the sanitary officer pertaining to this health program. For several years these agencies have been seeking an inexpensive method to pipe or cover over these ditches, but not until early in 1924 was a practicable economic plan evolved.

Terra cotta pipe, to be purchased by carload lots, was first considered. It was found that 30-inch pipe was required for the ditches selected to be covered first. In order to secure some definite figures, a hundred foot section of this ditch was arbitrarily designated and prices on the pipe were obtained. The cost of 30-inch tile delivered in Emporia was found to be about $10.50 per joint, 2½ feet long or $4.21 per foot. This section of the ditch was 100 feet long, making the cost of the tile $421. The cost of hauling and laying this pipe and building a manhole was estimated to be $35.60, making the total $456.60, or $4.57 per foot. This was out of the question with the funds on hand in the town treasury. Contract figures submitted were slightly more than those given above.

The next plan considered was that of making wooden forms and concreting the sides and bottom. The cost in this case, while estimated at slightly less than that of terra cotta pipe, was also considered prohibitive.

Other methods considered were the walling of the sides with brick and the laying of a concrete bottom, and the use of corrugated metal culvert pipe. Both of these methods were also regarded as too expensive, and the corrugated metal pipe was not considered advisable in a sandy country where the ditches could be given but little grade.

The plan finally adopted by the Emporia Town Council, upon the recommendation of the writer, was the purchase of metal molds for making the concrete pipe locally. It was decided that 24-inch and 30-inch pipe would be the sizes required for the ditches selected to be covered. Accordingly, the town council authorized the purchase of two molds, one for 30-inch pipe, and one for 24-inch pipe,

both 2½ feet in length. The socket, or "slip joint," type of pipe was selected.

COST OF METAL MOLDS

Each mold consists of one inside casing, one outside casing, one cone centering plate, one top socket ring, and one bottom socket ring. Experience has shown it to be advisable to purchase an extra bottom socket ring for each mold. The cost was as follows:

30-inch mold		
One 30-inch mold with centering plate (inside casing and outside casing)	$40. 25	
1 bottom socket ring	5. 00	
1 top socket ring	5. 75	
1 extra bottom socket ring	5. 00	
		$56. 00
24-inch mold		
One 24-inch mold with centering plate (inside casing and outside casing)	30. 80	
1 bottom socket ring	3. 55	
1 top socket ring	4. 30	
1 extra bottom socket ring	3. 55	
		42. 20
Total		98. 20

METHOD OF MANUFACTURE

A small concrete platform about 6 feet square and 4 inches thick was poured and leveled. On this platform the metal molds were set. It is important to have the molds set level in order to get smooth and even ends so that the joints will fit together properly. With the platform the above size, and by having the extra bottom socket ring, the two molds can be filled with concrete one day and at one mixing, and on the following day, at least during warm weather, the metal molds can be removed, cleaned, greased, set up, and refilled with concrete without moving or handling the pipe poured the first day. On the third day the pipe poured the first day can be moved to the storage yard with but little danger of breakage, the bottom socket ring taken out, and the molds reset and filled again.

The concrete is mixed by hand, and sufficient material is mixed at one time to pour one 30-inch and one 24-inch pipe. The thickness of the wall of the 24-inch pipe is 2 inches; that of the 30-inch pipe, 2½ inches. Approximately 2.9 cubic feet of concrete is required to make the 24-inch pipe, and 4.5 cubic feet to make the 30-inch pipe.

In making the above amount of concrete, 8 cubic feet of sand and gravel and 3 bags of cement are used. Allowing for a small amount of wastage, 8 cubic feet of concrete is a safe amount to mix up for the

two pipes. The aggregate is not screened, but is used just as it comes from one of the local gravel pits. This has no large pebbles in it, but has a good quantity of fine gravel.

The best mixture is 1 part Portland cement, 1½ parts sand, and 2½ parts gravel or crushed stone. Gravel should not exceed one-half inch in size. We have used a mix of 1 part Portland cement, 1¾ parts sand, and 2¾ parts of gravel with apparently good results. It would, perhaps, be advisable to screen the gravel.

Each concrete pipe is reinforced with six rings of No. 9 wire. The rings are placed as the molds are filled with concrete, and are spaced as evenly as possible.

There has been very little breakage in handling and in laying the pipe.

The detail cost of material used for making one 24-inch pipe and one 30-inch pipe both 2½ feet long, a total of 5 feet, is as follows:

3 bags cement at 80¢ per bag	$2.40	
8 cubic feet sand and gravel at $1.50 per yard or 5½ cents per cubic foot	.44	
12 rings No. 9 wire for reinforcing	.15	
Material cost		$2.99
The cost of labor, removing, cleaning, greasing, resetting molds, and mixing concretes is as follows:		
1 man, 2 hours at 20¢	.40	
1 man, 2 hours at 25¢	.50	
Labor cost		.90
Total		3.89

There are approximately 8 cubic feet of concrete in the two joints of pipe, and the cost of this for material and labor is $3.89.

Estimating the labor and material cost of the 30-inch pipe at nine-sixteenths of the total ($3.89), the 2½-foot section of 30-inch pipe costs approximately $2.19, or 87½ cents per foot; and putting the labor and material cost of the 24-inch pipe at seven-sixteenths of the total, the 2½-foot section of 24-inch pipe costs approximately $1.70, or 68 cents per foot.

There must be added to the above cost the amount of depreciation on the molds based on the total number of times each mold can be used before it becomes unserviceable. This is arbitrarily estimated at 4 cents per foot for the 24-inch pipe and 5 cents per foot for the 30-inch pipe; it may be less. There is nothing to base such an estimate on except that the first molds purchased have been used 160 times at this writing and show but slight deterioration, and have required no repairing.

At first only two molds were purchased in order to try out this method of pipe making with as small an outlay of money as possible. The pipe is made by the regularly employed street force of the town, who do this work under the supervision of either the superintendent of streets or the county sanitary officer. Neither of the latter spends much time supervising the manufacture, merely going by to see that the proper mix is made up, then again after molds are filled to see that the top socket rings are properly placed. Sometimes the concrete settles away from the ring a little, but this is remedied by a few minutes' work. This is one matter, however, to be carefully watched.

The concrete platform, the mixing board, the molds, and the sand and gravel were placed near the tool house, at which the street force reports daily. The cement, reinforcing material, and tools are stored inside the tool house, and the water is obtained from a city water tap located just inside the tool house.

Thus, it is seen, the materials are convenient and all unnecessary work and waste motion have been eliminated. This has contributed greatly to the low cost of manufacture. Furthermore, after several joints of pipe had been made and the men had become acquainted with the procedure, it was determined that two hours for two men were ample for taking down, cleaning off, greasing, setting up the molds, and mixing the concrete. This has been systematized to such an extent that two men are allowed two hours pay for completion of the task, and they usually finish a few minutes short of the time allowed. The chief advantage, however, is that it reduces supervision to a minimum.

After the pipe has set for two days, it is rolled to the storage yard near the tool house and allowed to cure three weeks before being handled. Storage space is rather limited; and as soon as there is enough pipe on hand to provide one day's work for the street force, it is placed in the ditches. This also eliminates danger of breakage in the storage yard, puts the pipe in service quickly, and the return on the investment is not delayed.

LAYING PIPE

A start was made by laying 90 feet of 30-inch pipe in one of the large ditches. Some additional cost was due to the grubbing out of two large stumps in order to straighten this ditch. Manholes are provided at intervals of 100 feet or less for cleaning and flushing out the pipe line in case clogging should occur. These add to the cost considerably but were deemed advisable.

The itemized cost for this work is as follows:

Top Filling molds. Center. Pipe ready to be laid. Bottom. Pipe in ditch

Hauling pipe from yard to ditch

1 team and driver (1 day)	$5.50	
1 helper (1 day)	2.00	
		$7.50

Labor for laying and covering pipe

4 men at $2 per day	8.00	
1 man at $2.50 per day	2.50	
		10.50
1 cast iron manhole and cover	9.50	
2 bags cement for cementing pipe joints and building manhole	1.60	
Old paving stones for manhole	1.50	
		12.60
Labor building manhole and to complete covering pipe		6.00
		36.60
90 feet 30-inch pipe at 92½¢ (87½¢ plus 5¢ per ft. depreciation on mold)		83.25
Total, exclusive of supervision		119.85

Therefore, for making, laying, and covering 90 feet of 30-inch homemade concrete pipe, including one manhole installed, the cost was $1.33 per foot.

The cost of 90 feet of 30-inch terra cotta pipe at $4.21 per foot would be $378.90; allowing the same amount as above for manhole, laying and covering—$36.60—would make the total cost $415.50. Comparing the cost of the home manufactured concrete pipe ($119.85) with the cost of terra cotta pipe for this job we find the saving to be $295.65, or about $3.28 per foot.

The second job of 30-inch concrete pipe placed and covered was 45 joints, or 112½ feet. The cost for this job, including two manholes installed, was as follows:

Hauling

1 team and driver, 8 hours at 60¢	$4.80	
1 helper, 8 hours at 20¢	1.60	
		$6.40

Two manholes

2 manholes and covers at $9	18.00	
2 bags cement, building manhole, and cementing pipe joints	1.60	
Old paving stones for manholes	3.00	
		22.60
Labor laying and covering pipe and installing two manholes, 107 hours at 20¢		21.40
		50.40
112½ ft. 30 inch pipe at 92½¢ (87½¢ plus 5¢ per foot depreciation on mold)		104.06
Total, exclusive of supervision		154.46

Allowing the same charge for installation for terra cotta pipe (it may be less) we find the 112½ feet of pipe at $4.21 would have cost $473.62 plus installation, $50.40, or a total of $524.02 as against $154.46 for the home manufactured concrete pipe, showing a saving of $369.56.

The above results demonstrated to the satisfaction of the town council that this plan of making pipe is practicable and economical, and they authorized the purchase of an additional 24-inch mold and another 30-inch mold. This has increased the output of concrete pipe to 5 feet of each sized pipe per day. It has also lessened the cost of manufacture considerably, as two men can usually remove the molds, clean, and grease them, set them up, and fill the four molds with concrete in three hours, whereas before it required two hours to fill the two molds. The amount of sand and gravel has been decreased slightly as it has been found that the wastage is no more in using the four molds than previously with two molds. The number of bags of cement has also been reduced in the larger batch, making the mix approximately 1 : 1¾ : 2¾. More reinforcing wire and a richer mixture may be advisable, but the pipe made to date has withstood handling and seems strong and durable.

List of materials used for 5 feet of 24-inch concrete pipe and 5 feet of 30-inch concrete pipe and the labor in making this amount of pipe are approximately as follows:

Material	
5 bags cement at 80¢	$4.00
Wire for reinforcing	.30
Labor	
1 man, 3 hours at 25¢	.75
1 man, 3 hours at 20¢	.60
15 cubic feet sand and gravel at 5½¢ per cubic foot	.83
Total, exclusive of supervision	6.48

Estimating the cost of 30-inch concrete pipe at nine-sixteenths of the total ($6.48) we find the 5 feet to cost about $3.64, or 73 cents per foot. Putting the cost of the 24-inch pipe at seven-sixteenths of the total ($6.48), 5 feet of the pipe costs approximately $2.83, or 56½ cents per foot. Adding 4 cents per foot for depreciation on molds for the 24-inch pipe, it now costs 60½ cents per foot, and adding 5 cents per foot on the 30-inch pipe, it now costs 78 cents per foot. Therefore, by using four molds instead of two we reduced the cost of the 30-inch pipe approximately 14½ cents per foot and of the 24-inch pipe 11½ cents per foot.

This method has worked exceedingly well and the work has been done at odd times by the street force under the supervision of the

sanitary officer and the superintendent of streets. The advantages as they appear to the writer are as follows:

(1) Small outlay for equipment.

(2) Pipe can be made at odd times, as much or as little as funds will permit.

(3) Practically no overhead when molds are not in use.

(4) Low cost of manufacture, with resulting greater accomplishment in proportion to expenditure.

(5) Equipment always on hand to manufacture pipe when needed.

No mention has been made of the use of the 24-inch pipe manufactured. This has not been laid in any of the ditches as yet, but will be ready to be put in when a sufficient amount of the larger pipe has been laid to permit the use of the 24-inch. The lowest price quoted on 24-inch terra cotta pipe was $2.03 per foot in carload lots. It has been manufactured for 68 cents per foot when two forms were used, and for 60½ cents per foot when four forms were used. Taking the higher figure for comparison, 68 cents per foot against $2.03 per foot for terra cotta, we find the saving to be $1.35 per foot.

Practically any sized pipe required can be made under this plan. One important point to bear in mind is that the molds must be thoroughly cleaned and then greased after each cast. This is an important factor in making the molds easy to remove; and it also aids in preserving the molds and in getting smooth pipe.

As far as is known, Emporia is the first municipality which has used the above method of manufacturing concrete pipe and covering the drainage ditches. It shows a considerable saving on the work completed. What Emporia has done, other towns with a wide-awake sanitary officer or superintendent can do; and this article is written with the hope that it will help other communities in solving their drainage problem in a satisfactory and economical way.

DEATHS DURING WEEK ENDED FEBRUARY 28, 1925

Summary of information received by telegraph from industrial insurance companies for week ended February 28, 1925, and corresponding week of 1924. (From the Weekly Health Index, March 3, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended Feb. 28, 1925	Corresponding week, 1924
Policies in force	58, 814, 219	55, 145, 701
Number of death claims	11, 954	12, 454
Death claims per 1,000 policies in force, annual rate	10. 6	11. 8

Deaths from all causes in certain large cities of the United States during the week ended February 28, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, March 3, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Feb. 28, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Feb. 28, 1925 [2]
	Total deaths	Death rate [1]		Week ended Feb. 28, 1925	Corresponding week, 1924	
Total (64 cities)	7,315	13.9	[3] 14.5	908	[3] 946	
Akron	37			7	3	77
Albany [4]	35	15.2	20.7	3	4	67
Atlanta	87	19.5	22.0	8	14	
Baltimore [4]	246	16.1	18.5	37	34	108
Birmingham	88	22.3	19.0	9	16	
Boston	288	19.2	14.6	50	32	132
Bridgeport	37			8	8	127
Buffalo	194	18.3	13.3	35	28	142
Cambridge	26	12.1	13.5	3	5	52
Camden	48	19.5	14.9	5	9	82
Chicago [4]	703	12.2	12.6	95	96	84
Cincinnati	111	14.1	16.4	10	12	59
Cleveland	198	11.0	12.1	32	37	79
Columbus	80	15.2	11.3	12	5	113
Dallas	49	13.2	21.6	5	11	
Dayton	45	13.6	14.5	6	3	96
Denver	85			8	8	
Des Moines	30	10.5	10.1	7	3	120
Detroit	289			54	46	91
Duluth	19	9.0	9.6	1	1	21
Erie	30			6	10	117
Fall River [4]	40	17.2	15.9	10	8	144
Flint	27			5	2	82
Fort Worth	28	9.6	14.1	2	5	
Grand Rapids	34	11.8	10.2	4	2	62
Indianapolis	103	15.0	13.5	11	10	76
Jacksonville, Fla	22	10.9	18.3	3	6	67
Jersey City	62	10.3	14.9	4	11	28
Kansas City, Kans	25	10.5	15.0	2	3	42
Kansas City, Mo	131	18.6	14.9	20	19	
Los Angeles	265			22	14	61
Louisville	98	19.7	16.7	11	8	96
Lowell	31	13.9	10.8	4	6	70
Lynn	32	15.9	16.1	6	3	159
Memphis	68	20.3	24.8	12	9	
Milwaukee	102	10.6	9.3	13	13	59
Minneapolis	104	12.7	11.5	15	9	80
Nashville [4]	44	18.5	22.0	8	6	
New Bedford	35	13.5	12.6	8	7	133
New Haven	54	15.7	13.6	7	6	91
New Orleans	176	22.1	20.9	14	15	
New York	1,473	12.6	13.7	187	218	75
Bronx Borough	164	9.5	11.0	15	16	52
Brooklyn Borough	489	11.4	13.4	58	75	61
Manhattan Borough	651	15.0	16.2	96	114	96
Queens Borough	125	11.4	8.4	15	9	74
Richmond Borough	44	17.1	17.2	3	4	54
Newark, N. J	107	12.3	12.8	12	14	55
Norfolk	27	8.3	14.3	6	7	107
Oakland	69	14.2	18.2	3	9	35
Oklahoma City	21	10.2	14.5	4	4	
Omaha	60	14.8	14.5	2	5	19
Paterson	33	12.1	14.8	3	6	50
Philadelphia	532	14.0	15.6	63	62	79
Pittsburgh	174	14.4	16.3	14	30	49
Portland, Oreg	69	12.7	9.8	5	2	52
Providence	72	15.3	20.1	14	12	112
Richmond	59	16.5	18.7	3	10	36
Rochester	68	10.7		5		40
St. Louis	232	14.7	15.3	12	20	
St. Paul	56	11.9	12.6	5	5	43
Salt Lake City [4]	33	13.1	15.4	1	4	16

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 63 cities.
[4] Deaths for week ended Friday, February 27, 1925.

Deaths from all causes in certain large cities of the United States during the week ended February 28, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924—Continued

City	Week ended Feb. 28, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Feb 28, 1925
	Total deaths	Death rate		Week ended Feb 28, 1925	Corresponding week, 1924	
San Antonio	60	15.8	21 2	7	7	
San Francisco	130	12.2	15 7	10	10	58
Schenectady	30	15.3	8.3	4	1	113
Seattle	55			3	4	31
Somerville	23	11 7	11.9	4	4	107
Spokane	23			1	5	22
Springfield, Mass	36	12.3	11.9	6	7	89
Syracuse	51	13.9	11.1	6	5	75
Tacoma	27	13.5	10 6	3	0	71
Toledo	87	15 8	13.8	7	8	63
Trenton	37	14.6	20.1	6	8	97
Washington, D. C	157	16.4	16.7	20	13	112
Waterbury	27			4	2	88
Wilmington, Del	36	15 4	13 9	5	2	114
Worcester	42	11 0	13 9	7	8	81
Yonkers	33	15 4	7.6	4	3	88
Youngstown	45	14 7	16.1	8	6	101

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended March 7, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	1
Chicken pox	29
Diphtheria	11
Dysentery	2
Influenza	897
Malaria	15
Measles	52
Mumps	48
Ophthalmia neonatorum	1
Pellagra	9
Pneumonia	191
Poliomyelitis	1
Scarlet fever	19
Smallpox	183
Trachoma	1
Tuberculosis	36
Typhoid fever	12
Whooping cough	6

ARIZONA

	Cases
Chicken pox	6
Diphtheria	1
Measles	180
Mumps	2
Pneumonia	2
Scarlet fever	10
Trachoma	9
Tuberculosis	2
Whooping cough	1

ARKANSAS

	Cases
Chicken pox	20
Diphtheria	1
Influenza	399
Malaria	41
Measles	32
Mumps	39
Pellagra	4
Scarlet fever	9
Smallpox	7

ARKANSAS—continued

	Cases
Tuberculosis	4
Typhoid fever	9
Whooping cough	19

CALIFORNIA

	Cases
Cerebrospinal meningitis:	
Merced County	1
Siskiyou County	1
Diphtheria	120
Influenza	120
Lethargic encepalitis:	
Los Angeles	2
San Diego	1
Measles	72
Poliomyelitis:	
Berkeley	2
Los Angeles	1
Los Angeles County	1
Scarlet fever	169
Smallpox.	
Los Angeles	37
Los Angeles County	17
Oakland	8
San Diego	15
San Francisco	9
Scattering	55
Typhoid fever	14

COLORADO

(Exclusive of Denver)

	Cases
Chicken pox	59
Diphtheria	15
Influenza	14
Measles	1
Mumps	16
Pneumonia	19
Scarlet fever	33
Tuberculosis	66
Typhoid fever	5
Whooping cough	3

CONNECTICUT

	Cases
Chicken pox	44
Conjunctivitis (infectious)	1
Diphtheria	60
German measles	44
Influenza	5
Measles	99
Mumps	85
Paratyphoid fever	1
Pneumonia (all forms)	92
Scarlet fever	153
Septic sore throat	4
Trachoma	1
Tuberculosis (all forms)	31
Typhoid fever	5
Whooping cough	68

DELAWARE

Diphtheria	4
Mumps	1
Pneumonia	1
Scarlet fever	8
Tuberculosis	7
Whooping cough	3

DISTRICT OF COLUMBIA

Chicken pox	30
Diphtheria	15
Influenza	1
Measles	13
Pneumonia	38
Scarlet fever	20
Smallpox	1
Tuberculosis	26
Typhoid fever	1
Whooping cough	2

FLORIDA

Diphtheria	5
Influenza	23
Malaria	7
Pneumonia	1
Scarlet fever	2
Smallpox	1
Typhoid fever	12

GEORGIA

Chicken pox	53
Conjunctivitis (infectious)	1
Dengue	1
Diphtheria	10
Dysentery (bacillary)	1
Hookworm disease	4
Influenza	961
Lethargic encephalitis	1
Malaria	15
Measles	16
Mumps	119
Pellagra	4
Pneumonia	162
Rabies	2
Scarlet fever	12
Septic sore throat	9
Small pox	3
Tuberculosis	24
Typhoid fever	8
Whooping cough	44

ILLINOIS

	Cases
Cerebrospinal meningitis—Menard County	1
Diphtheria:	
Cook County	65
Scattering	38
Influenza	57
Lethargic encephalitis:	
Cook County	1
Knox County	1
Measles	948
Pneumonia	428
Poliomyelitis—Williamson County	1
Scarlet fever:	
Cook County	346
Kane County	9
Kankakee County	10
Knox County	10
La Salle County	9
St. Clair County	11
Will County	9
Scattering	130
Smallpox:	
Madison County	10
St. Clair County	11
Scattering	18
Tuberculosis	177
Typhoid fever	13
Whooping cough	252

INDIANA

Chicken pox	69
Diphtheria	36
Influenza	270
Measles	179
Mumps	12
Pneumonia	35
Poliomyelitis	1
Scarlet fever	243
Smallpox	122
Tuberculosis	45
Typhoid fever	8
Whooping cough	27

IOWA

Diphtheria	15
Scarlet fever	41
Smallpox	12
Typhoid fever	1

KANSAS

Cerebrospinal meningitis	2
Chicken pox	105
Diphtheria	30
German measles	3
Influenza	41
Measles	12
Mumps	512
Pneumonia	165
Scarlet fever	136
Smallpox	3
Tuberculosis	33
Typhoid fever	4
Whooping cough	61

LOUISIANA

Cerebrospinal meningitis	1
Diphtheria	15
Influenza	213

LOUISIANA—continued

	Cases
Malaria	8
Pneumonia	36
Scarlet fever	31
Smallpox	26
Tuberculosis	35
Typhoid fever	9

MAINE

Chicken pox	23
Conjunctivitis	1
Diphtheria	4
Influenza	13
Lethargic encephalitis	1
Measles	13
Mumps	227
Pneumonia	10
Scarlet fever	19
Tuberculosis	4
Typhoid fever	2
Vincent's angina	1
Whooping cough	13

MARYLAND [1]

Cerebrospinal meningitis	1
Chicken pox	73
Diphtheria	24
German measles	4
Influenza	68
Measles	52
Mumps	89
Pneumonia (all forms)	146
Scarlet fever	71
Septic sore throat	1
Tuberculosis	49
Typhoid fever	2
Whooping cough	89

MASSACHUSETTS

Cerebrospinal meningitis	2
Chicken pox	238
Conjunctivitis (suppurative)	26
Diphtheria	120
German measles	228
Hookworm disease	1
Influenza	65
Lethargic encephalitis	4
Measles	599
Mumps	90
Ophthalmia neonatorum	32
Pneumonia (lobar)	215
Poliomyelitis	2
Scarlet fever	319
Septic sore throat	4
Trachoma	2
Tuberculosis (all forms)	142
Typhoid fever	5
Whooping cough	198

MICHIGAN

Diphtheria	85
Measles	142
Pneumonia	273
Scarlet fever	418
Smallpox	10
Tuberculosis	50
Typhoid fever	10
Whooping cough	81

MINNESOTA

	Cases
Cerebrospinal meningitis	1
Chicken pox	139
Diphtheria	68
Measles	44
Pneumonia	3
Scarlet fever	247
Smallpox	26
Tuberculosis	67
Typhoid fever	6
Whooping cough	9

MISSISSIPPI

Diphtheria	9
Influenza	525
Scarlet fever	2
Smallpox	22
Typhoid fever	4

MISSOURI

Anthrax	1
Cerebrospinal meningitis	3
Chicken pox	87
Diphtheria	87
Influenza	75
Measles	9
Mumps	107
Pneumonia	76
Poliomyelitis	1
Rabies	2
Scarlet fever	434
Smallpox	13
Tetanus	1
Tuberculosis	79
Typhoid fever	3
Whooping cough	17

MONTANA [2]

Chicken pox	38
Diphtheria	14
German measles	117
Measles	36
Mumps	22
Pneumonia	1
Scarlet fever	56
Smallpox	18
Tuberculosis	12
Typhoid fever	6
Whooping cough	23

NEBRASKA

Chicken pox	28
Diphtheria	7
Mumps	7
Pneumonia	3
Scarlet fever	9
Smallpox	38
Typhoid fever	1
Whooping cough	10

NEW JERSEY

Anthrax	1
Cerebrospinal meningitis	1
Chicken pox	156
Diphtheria	85
Influenza	42
Measles	223
Paratyphoid fever	2

[1] Week ended Friday.

[2] Reports for two weeks ended March 7, 1925.

NEW JERSEY—continued

	Cases
Pneumonia	144
Scarlet fever	320
Smallpox	5
Trachoma	4
Trichinosis	4
Typhoid fever	9
Whooping cough	231

NEW MEXICO

Chicken pox	28
Conjunctivitis	2
Diphtheria	4
Influenza	76
Measles	34
Mumps	30
Pellagra	1
Pneumonia	15
Scarlet fever	5
Tuberculosis	37
Whooping cough	4

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	2
Diphtheria	88
Influenza	132
Lethargic encephalitis	6
Measles	554
Pneumonia	412
Poliomyelitis	1
Scarlet fever	344
Smallpox	14
Typhoid fever	19
Whooping cough	228

NORTH CAROLINA

Chicken pox	114
Diphtheria	34
German measles	1
Measles	117
Scarlet fever	23
Small pox	43
Typhoid fever	2
Whooping cough	117

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Chicken pox	32
Diphtheria	16
Influenza	489
Measles	8
Mumps	54
Pneumonia	169
Poliomyelitis-Washita County	1
Scarlet fever:	
Washington County	8
Woods County	9
Scattering	19
Smallpox:	
Custer County	8
Scattering	7
Typhoid fever	9
Whooping cough	30

OREGON

	Cases
Cerebrospinal meningitis	[1] 1
Chicken pox	24
Diphtheria	24
Influenza	4
Lethargic encephalitis	2
Measles	2
Mumps	32
Pneumonia	[1] 5
Scarlet fever	26
Smallpox	10
Tuberculosis	9
Typhoid fever	[1] 1
Whooping cough	8

SOUTH DAKOTA

Chicken pox	5
Diphtheria	8
Measles	1
Mumps	5
Pneumonia	5
Poliomyelitis	1
Scarlet fever	43
Smallpox	17
Tuberculosis	2
Typhoid fever	2
Whooping cough	7

TEXAS

Cerebrospinal meningitis	1
Chicken pox	100
Dengue	10
Diphtheria	42
Dysentery (epidemic)	4
Influenza	1,862
Measles	91
Mumps	122
Pellagra	8
Pneumonia	192
Scarlet fever	29
Smallpox	67
Tetanus	1
Trachoma	5
Tuberculosis	41
Typhoid fever	3
Whooping cough	59

VERMONT

Chicken pox	64
Diphtheria	3
Measles	4
Mumps	63
Pneumonia	2
Scarlet fever	24
Whooping cough	2

WASHINGTON

Chicken pox	156
Diphtheria	60
German measles	68
Lethargic encephalitis	1
Measles	8
Mumps	215
Pneumonia	1
Scarlet fever	63
Smallpox	93
Tuberculosis	26
Typhoid fever	4
Whooping cough	47

[1] Deaths.

WEST VIRGINIA

	Cases
Diphtheria	7
Scarlet fever	3
Smallpox	6
Typhoid fever	3

WISCONSIN

	Cases
Milwaukee:	
Chicken pox	47
Diphtheria	15
German measles	583
Measles	487
Mumps	65
Pneumonia	7
Scarlet fever	11
Smallpox	12
Tuberculosis	12
Whooping cough	41
Scattering:	
Chicken pox	129
Diphtheria	18

WISCONSIN—continued

Scattering—Continued.	Cases
German measles	86
Influenza	79
Measles	171
Mumps	364
Pneumonia	20
Poliomyelitis	2
Scarlet fever	129
Smallpox	41
Tuberculosis	15
Whooping cough	49

WYOMING

	Cases
Chicken pox	23
Diphtheria	4
Measles	2
Mumps	7
Pneumonia	2
Scarlet fever	7
Trachoma	2
Typhoid fever	11

Reports for Week Ended February 28, 1925

DISTRICT OF COLUMBIA

	Cases
Chicken pox	48
Diphtheria	15
Influenza	1
Measles	11
Pneumonia	43
Scarlet fever	38
Smallpox	1
Tuberculosis	31
Whooping cough	20

NORTH DAKOTA

	Cases
Chicken pox	40
Diphtheria	9
German measles	2
Measles	3
Mumps	25
Pneumonia	23
Scarlet fever	99
Smallpox	2
Tuberculosis	3
Typhoid fever	6
Whooping cough	24

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
November, 1924										
Colorado	3	116	1		13		2	164	11	11
December, 1924										
Colorado	1	105	4		8		1	180	1	5
January, 1925										
Arkansas	3	29	865	88	175	19	0	51	48	37
Colorado	1	99	11		31			205	3	12
Delaware		24	7		7			18		
North Dakota	1	24	5		28		2	346	50	3
February, 1925										
Vermont		17			29		1	75		3

Number of Cases of Certain Communicable Diseases Reported for the Month of December, 1924, by State Health Officers

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	182	131	141	121	86	352	144	75	105
Arizona	19	20	179	84	55	25	202	7	28
Arkansas	128	85	25	18	67	42	[1] 39	90	84
California [5]	....	....	....	....	....	....	....	....	....
Colorado [5]	....	....	....	....	....	....	....	....	....
Connecticut	308	293	71	84	824	....	117	33	222
Delaware	5	13	2	8	6	....	7	1	8
District of Columbia	156	62	16	....	173	....	92	35	54
Florida [5]	....	....	....	....	....	....	....	....	....
Georgia	78	120	96	8	28	17	81	16	15
Idaho	20	....	....	....	22	....	....	3	....
Illinois	2,037	664	815	823	1,516	166	925	231	950
Indiana	....	237	....	....	462	....	....	50	....
Iowa	108	77	46	36	215	219	....	([2])	40
Kansas	691	186	19	761	393	17	192	9	87
Kentucky [3]	....	....	....	....	....	....	....	....	....
Louisiana	35	101	11	1	60	53	[1] 107	157	8
Maine	257	43	14	255	149	....	34	20	31
Maryland	400	218	86	80	378	....	203	63	278
Massachusetts	1,242	677	674	392	1,411	....	475	73	367
Michigan [5]	....	....	....	....	....	....	....	....	....
Minnesota	797	402	65	....	986	554	267	17	111
Mississippi	829	141	114	1,397	61	102	267	141	374
Missouri	234	331	22	45	937	43	116	24	27
Montana	78	92	29	3	59	65	44	9	65
Nebraska	50	....	....	....	69	....	....	2	....
New Hampshire [4]	....	....	....	....	....	....	....	....	....
New Jersey	957	519	336	....	811	11	379	122	1,026
New Mexico [5]	....	....	....	....	....	....	....	....	....
New York	2,633	1,520	925	833	2,263	51	1,555	784	1,440
North Carolina	634	314	82	....	215	152	....	27	451
North Dakota	162	29	64	14	167	69	5	....	6
Ohio	2,430	687	257	605	1,722	358	536	107	598
Oklahoma	81	....	9	....	174	27	62	217	138
Oregon	137	168	17	21	182	70	61	11	16
Pennsylvania	3,580	1,192	1,917	1,918	2,633	6	475	164	1,120
Rhode Island	....	95	....	....	103	....	....	15	....
South Carolina	46	217	....	39	8	98	[1] 7	16	8
South Dakota	105	34	7	8	203	88	4	8	20
Tennessee [3]	329	94	154	....	186	161	146	94	196
Texas [3]	....	....	....	....	....	....	....	....	....
Utah	793	42	187	16	75	5	[1] 19	7	62
Vermont	298	25	44	135	93	....	[1] 10	5	104
Virginia	799	344	290	....	279	2	[1] 147	48	590
Washington	561	167	45	217	176	103	133	41	33
West Virginia	312	120	79	....	213	47	27	39	155
Wisconsin	1,516	265	760	682	643	146	132	20	441
Wyoming	63	1	2	4	16	10	....	....	....

[1] Pulmonary.
[2] Reports not required by law.
[3] Reports received weekly.
[4] Reports received annually.
[5] Not received.

Case Rates per 1,000 Population (Annual Basis) for the Month of December, 1924

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	0.88	0.63	0.03	0.58	0.42	1.70	0.70	0.36	0.51
Arizona	.57	.60	5.36	2.52	1.65	.75	6.05	.21	.84
Arkansas	.82	.23	.16	.12	.43	.27	[1] .25	.58	.54
California [5]									
Colorado [5]									
Connecticut	2.42	2.30	.56	.66	6.47		.92	.26	1.74
Delaware	.25	.66	.10	.41	.30		.36	.05	.41
District of Columbia	4.21	1.67	.43		4.67		2.48	.94	1.46
Florida [5]									
Georgia	.30	.47	.37	.03	.11	.07	.32	.06	.06
Idaho	.49				.54			.07	
Illinois	3.50	1.14	1.40	1.41	2.60	.28	1.59	.40	1.63
Indiana		.92			1.80			.19	
Iowa	.51	.37	.22	.17	1.02	1.04		(2)	.19
Kansas	4.52	1.22	.12	4.98	2.57	.11	1.26	.06	.57
Kentucky [3]									
Louisiana	.22	.64	.07	.01	.38	.34	[1] .68	.99	.05
Maine	3.89	.65	.21	3.86	2.26		.51	.30	.47
Maryland	3.10	1.69	.67	.62	2.93		1.58	.49	2.16
Massachusetts	3.60	1.96	1.95	1.13	4.09		1.38	.21	1.06
Michigan [5]									
Minnesota	3.72	1.87	.30		4.60	2.58	1.25	.08	.52
Mississippi	5.47	.93	.75	9.21	.40	.67	1.76	.93	2.47
Missouri	.80	1.13	.08	.15	3.20	.15	.40	.08	.09
Montana	1.40	1.73	.54	.06	1.11	1.22	.83	.17	1.22
Nebraska	.44				.61			.02	
New Hampshire [4]									
New Jersey	3.28	1.78	1.15		2.78	.04	1.30	.42	3.52
New Mexico [5]									
New York	2.83	1.64	1.00	.90	2.43	.05	1.67	.84	1.55
North Carolina	2.75	1.36	.36		93	66		.12	1.97
North Dakota	2.82	.50	1.11	.24	2.90	1.20	.09		.10
Ohio	4.61	1.30	.49	1.15	3.27	.68	1.02	.20	1.14
Oklahoma	.43		.05		.93	.14	.33	1.16	.74
Oregon	1.94	2.38	.24	.30	2.57	.99	.86	.16	.23
Pennsylvania	4.59	1.53	2.46	2.46	3.38	.01	.61	.21	1.44
Rhode Island		1.77			1.92			.28	
South Carolina	.31	1.45		.26	.05	.66	[1] .05	.11	.05
South Dakota	1.88	.61	.13	.14	3.63	1.57	07	.14	.36
Tennessee [5]	1.61	.46	.75		.91	.79	.72	.46	.96
Texas [3]									
Utah	19.32	1.02	4.56	.39	1.83	.12	[1] .46	.17	1.51
Vermont	9.98	.84	1.47	4.52	3.12		[1] .34	.17	3.48
Virginia	3.89	1.68	1.41		1.36	.01	[1] .72	.23	2.87
Washington	4.55	1.35	.36	1.76	1.43	.84	1.08	.33	.27
West Virginia	2.34	.90	.59		1.60	.35	.20	.29	1.16
Wisconsin	6.46	1.13	3.24	2.91	2.74	.62	56	.09	1.88
Wyoming	3.43	.05	.11	.22	.87	.54			

[1] Pulmonary.
[2] Reports not required by law.
[3] Reports received weekly
[4] Reports received annually.
[5] Not received.

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended February 21, 1925:

Los Angeles, Calif.

Week ended Feb. 21, 1925:

Number of rats examined	3,446
Number of rats found to be plague infected	14
Number of squirrels examined	446
Number of squirrels found to be plague infected	2

Totals to Feb. 21, 1925:

Number of rats examined	53,023
Number of rats found to be plague infected	97
Number of squirrels examined	2,304
Number of squirrels found to be plague infected	2

Oakland, Calif.

Week ended Feb. 21, 1925:	
Number of rats examined	3, 196
Number of rats found to be plague infected	1
Totals to Feb. 21, 1925:	
Number of rats examined	12, 324
Number of rats found to be plague infected	19

New Orleans, La.

Week ended Feb. 21, 1925:	
Number of vessels inspected	342
Number of inspections made	1, 078
Number of vessels fumigated with cyanide gas	44
Number of rodents examined for plague	5, 133
Number of rodents found to be plague infected	0
Totals to Feb. 21, 1925:	
Number of rodents examined	42, 491
Number of rodents found to be plague infected	12

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended February 21, 1925, 34 States reported 1,573 cases of diphtheria. For the week ended February 23, 1924, the same States reported 1,691 cases of this disease. One hundred and four cities, situated in all parts of the country and having an aggregate population of more than 28,800,000, reported 827 cases for the week ended February 21, 1925. Last year for the corresponding week they reported 1,076 cases. The estimated expectancy for these cities was 1,086 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty States reported 3,494 cases of measles for the week ended February 21, 1925, and 16,389 cases of this disease for the week ended February 23, 1924. One hundred and four cities reported 2,120 cases of measles for the week this year, and 5,991 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: Thirty-four States—this year, 4,259 cases; last year, 3,812 cases; 104 cities—this year, 2,161; last year, 1,679; estimated expectancy, 1,059 cases.

Smallpox.—For the week ended February 21, 1925, 34 States reported 1,207 cases of smallpox. Last year for the corresponding week they reported 1,305 cases. One hundred and four cities reported smallpox for the week as follows: 1925, 366 cases; 1924, 485 cases; estimated expectancy, 105 cases. These cities reported 12 deaths from smallpox for the week this year, of which 4 occurred at Minneapolis.

Typhoid fever.—Two hundred and seventy-five cases of typhoid fever were reported for the week ended February 21, 1925, by 33

States. For the corresponding week of 1924 the same States reported 221 cases. One hundred and four cities reported 60 cases of typhoid fever for the week this year, and 52 cases for the week last year. The estimated expectancy for these cities was 49 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 104 cities as follows: 1925, 1,322 deaths; 1924, 1,283 deaths.

City reports for week ended February 21, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	8	2	2	4	0	0	23	3
New Hampshire:									
Concord	22,408	0	0	0	0	0	0	0	0
Vermont.									
Barre	[1] 10,008	0	0	0	1	0	0	10	2
Burlington	23,613	2	1	0	0	0	0	8	0
Massachusetts:									
Boston	770,400	32	66	56	24	4	199	4	49
Fall River	120,912	3	6	1	1	1	0	0	6
Springfield	144,227	6	4	1	1	1	66	4	3
Worcester	191,927	34	4	7	0	0	2	5	3
Rhode Island:									
Pawtucket	68,799	1	1	2	0	0	0	0	1
Providence	242,378	0	13	10	0	0	7	0	12
Connecticut:									
Bridgeport	[1] 143,555	1	9	5	1	1	2	0	2
Hartford	[1] 138,036	2	9	12	2	0	2	4	9
New Haven	172,967	42	3	1	4	0	12	1	7
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	17	23	6	2	0	110	9	16
New York	5,927,625	206	223	188	125	28	61	35	227
Rochester	317,867	8	9	0	0	0	20	36	5
Syracuse	184,511	18	7	4	0	0	3	44	7
New Jersey.									
Camden	124,157	7	4	7	0	0	6	0	8
Newark	438,699	35	21	9	18	0	60	9	16
Trenton	127,390	0	7	3	8	0	16	0	4
Pennsylvania									
Philadelphia	1,922,788	79	76	84	....	9	220	30	93
Pittsburgh	613,442	49	24	19	....	4	228	39	50
Reading	110,917	7	3	2	0	0	12	3	0
Scranton	140,636	5	4	3	0	0	1	0	6

[1] Population Jan 1, 1920.

City reports for week ended February 21, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	22	10	3	4	2	0	8	10
Cleveland	888,519	84	33	35	13	4	6	12	35
Columbus	261,082	21	4	4	-------	2	2	2	8
Toledo	268,338	27	7	8	1	1	28	1	4
Indiana:									
Fort Wayne	93,573	17	3	2	0	0	4	0	3
Indianapolis	342,718	39	11	5	-------	1	3	5	30
South Bend	76,709	8	1	2	0	0	7	0	3
Terre Haute	68,939	2	1	2	0	0	1	0	9
Illinois:									
Chicago	2,886,121	110	119	64	25	7	414	25	97
Cicero	55,968	0	1	0	0	0	14	1	0
Springfield	61,833	5	2	6	4	0	4	50	1
Michigan:									
Detroit	995,668	67	62	22	3	4	12	8	43
Flint	117,968	6	7	3	0	0	1	0	1
Grand Rapids	145,947	7	3	2	2	1	10	0	4
Wisconsin:									
Madison	42,519	8	0	0	0	-------	2	240	-------
Milwaukee	484,595	50	17	15	3	3	426	106	0
Racine	64,393	28	2	1	0	0	22	6	1
Superior	[1] 39,671	15	1	0	0	0	0	0	3
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	10	2	0	0	0	0	0	1
Minneapolis	409,125	72	16	30	0	0	0	5	9
St. Paul	241,891	18	13	17	0	1	4	44	6
Iowa:									
Davenport	61,262	1	1	2	0	-------	0	0	-------
Des Moines	140,923	1	4	3	0	-------	0	0	-------
Sioux City	79,662	0	2	1	0	-------	0	0	-------
Waterloo	39,667	2	0	0	0	-------	0	2	-------
Missouri:									
Kansas City	351,819	5	9	5	11	9	2	20	20
St. Joseph	78,232	11	2	2	0	0	0	2	6
St Louis	803,853	27	48	29	1	0	7	13	-------
North Dakota:									
Fargo	24,841	23	1	0	0	0	0	15	0
Grand Forks	14,547	1	0	0	0	-------	0	0	-------
South Dakota:									
Aberdeen	15,829	5	-------	0	0	-------	0	0	-------
Sioux Falls	29,206	2	1	0	0	-------	0	0	-------
Nebraska:									
Lincoln	58,761	11	1	1	0	1	0	1	2
Omaha	204,382	13	5	10	0	0	0	0	10
Kansas:									
Topeka	52,555	10	2	2	0	0	0	163	2
Wichita	79,261	28	1	5	0	0	0	3	6
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	3	2	6	0	0	0	0	0
Maryland:									
Baltimore	773,580	50	27	29	30	7	10	14	51
Cumberland	32,361	-------	1	3	1	-------	0	-------	-------
Frederick	11,301	-------	1	1	1	0	1	-------	1
District of Columbia:									
Washington	[1] 437,571	17	13	15	-------	4	12	-------	16
Virginia:									
Lynchburg	30,277	0	1	2	0	0	1	34	0
Norfolk	159,089	29	2	2	0	0	1	94	3
Richmond	181,044	4	3	6	-------	3	4	3	5
Roanoke	55,502	8	1	2	0	0	1	0	0
West Virginia:									
Charleston	45,597	3	1	3	5	0	17	2	1
Huntington	57,918	0	1	1	0	-------	0	0	-------
Wheeling	[1] 56,208	3	1	0	0	0	2	0	0
North Carolina:									
Raleigh	29,171	1	0	1	-------	1	2	0	3
Wilmington	35,719	3	0	0	0	0	0	6	3
Winston-Salem	56,230	5	1	2	0	0	1	1	2

[1] Population Jan. 1, 1920.

City reports for week ended February 21, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC—con.									
South Carolina:									
Charleston	71,245	0	1	0	0	0	0	1	2
Columbia	39,688	1	1	1	0	0	2	4	2
Greenville	25,789	1	0	0	-------	2	0	0	0
Georgia:									
Atlanta	222,963	7	2	3	32	9	0	2	24
Brunswick	15,937	-------	1	0	16	0	0	-------	1
Savannah	89,448	-------	1	-------	-------	-------	-------	-------	-------
Florida:									
St. Petersburg	24,403	0	0	0	0	0	0	0	3
Tampa	56,050	0	2	0	9	0	0	3	3
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	2	1	0	0	0	0	5
Louisville	257,671	4	5	3	1	0	0	0	12
Tennessee:									
Memphis	170,067	17	4	4	-------	1	2	4	19
Nashville	121,128	1	1	1	-------	4	6	1	5
Alabama:									
Birmingham	195,901	8	2	4	13	6	1	9	13
Mobile	63,858	0	1	0	41	2	0	2	2
Montgomery	45,383	0	1	1	11	0	0	5	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	11	0	2	0	-------	0	6	-------
Little Rock	70,916	0	1	0	10	3	2	1	2
Louisiana:									
New Orlenas	404,575	5	13	12	35	20	0	0	25
Shreveport	54,590	1	-------	0	0	1	0	0	8
Oklahoma:									
Oklahoma	101,150	5	1	2	7	1	0	2	2
Tulsa	102,018	11	1	1	0	-------	1	-------	-------
Texas:									
Dallas	177,274	-------	5	6	163	2	0	-------	18
Galveston	46,877	0	1	1	0	0	0	2	5
Houston	154,970	10	2	3	-------	1	1	1	13
San Antonio	184,727	1	2	3	2	3	0	0	9
MOUNTAIN									
Montana:									
Billings	16,927	2	1	0	0	0	0	12	3
Great Falls	27,787	5	1	3	-------	1	48	2	0
Helena	[1] 12,037	-------	0	0	0	0	0	-------	0
Missoula	[1] 12,668	0	0	2	0	0	15	0	1
Idaho:									
Boise	22,806	10	0	0	0	0	1	0	0
Colorado:									
Denver	272,031	26	10	10	-------	4	0	102	9
Pueblo	43,519	16	3	2	-------	1	0	10	1
New Mexico:									
Albuquerque	16,648	5	1	0	0	0	0	1	2
Utah:									
Salt Lake City	126,241	42	2	0	0	0	1	31	8
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	68	6	7	0	-------	3	80	-------
Spokane	104,573	11	4	22	0	-------	0	0	-------
Tacoma	101,731	1	2	0	0	0	0	1	4
Oregon:									
Portland	273,621	7	7	12	1	0	1	8	0
California:									
Los Angeles	666,853	67	36	10	43	1	17	24	31
Sacramento	69,950	0	1	2	0	0	0	0	4
San Francisco	539,038	41	25	16	3	2	2	64	13

[1] Population Jan. 1, 1920.

City reports for week ended February 21, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine.											
Portland	2	0	0	0	0	1	1	0	0	2	17
New Hampshire:											
Concord	0	5	0	0	0	0	0	0	0	0	5
Vermont:											
Barre	1	4	0	0	0	0	0	0	0	0	7
Burlington	1	0	0	0	0	0	0	0	0	1	4
Massachusetts:											
Boston	55	115	0	0	0	14	2	0	0	61	265
Fall River	4	2	0	0	0	5	1	0	0	7	45
Springfield	7	29	0	0	0	1	0	0	0	13	32
Worcester	9	13	0	0	0	0	0	0	0	11	48
Rhode Island:											
Pawtucket	2	2	0	0	0	1	0	0	0	0	15
Providence	9	16	0	0	0	5	0	0	0	0	70
Connecticut:											
Bridgeport	6	22	0	0	0	2	0	0	0	2	27
Hartford	5	10	0	0	0	3	1	0	0	0	47
New Haven	6	26	0	0	0	3	0	0	0	6	57
MIDDLE ATLANTIC											
New York											
Buffalo	21	19	1	0	0	5	1	0	1	30	116
New York	178	340	0	0	0	[1] 117	8	11	0	105	1,533
Rochester	11	69	0	0	0	3	0	0	0	9	63
Syracuse	18	4	0	0	0	2	0	0	0	5	51
New Jersey.											
Camden		21	0	1	1	2	0	2	0	3	28
Newark	23	40	0	0	0	7	0	0	0	50	115
Trenton	3	3	0	0	0	4	0	0	0	6	44
Pennsylvania:											
Philadelphia	62	178	0	2	0	50	3	2	0	69	641
Pittsburgh	21	57	1	0	0	11	1	0	0	5	215
Reading	2	11	0	0	0	2	0	4	0	9	41
Scranton	4	1	0	0	0	0	0	0	0	4	-------
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	10	19	1	5	0	8	0	1	1	3	131
Cleveland	32	37	1	2	0	19	1	1	0	9	215
Columbus	8	8	1	14	0	2	0	0	0	9	69
Toledo	18	18	4	0	0	4	0	1	0	24	72
Indiana:											
Fort Wayne	3	7	0	0	0	1	0	0	0	1	16
Indianapolis	10	8	4	25	0	7	0	0	0	9	128
South Bend	2	15	0	1	0	3	0	0	0	2	16
Terre Haute	2	8	8	9	0	0	0	0	0	0	22
Illinois:											
Chicago	95	287	3	3	0	53	3	3	1	147	754
Cicero	1	4	0	0	0	0	0	0	0	4	3
Springfield	1	9	0	0	0	1	0	2	0	3	25
Michigan:											
Detroit	82	100	4	4	0	36	2	1	0	44	289
Flint	8	5	1	0	0	1	1	0	0	2	23
Grand Rapids	8	43	1	1	0	0	0	0	0	1	32
Wisconsin:											
Madison	3	6	1	0	--------	-------	0	0	--------	12	--------
Milwaukee	37	22	1	3	2	6	6	0	0	32	115
Racine	5	0	0	8	0	1	1	0	0	0	10
Superior	2	4	3	0	0	0	0	0	0	0	9
WEST NORTH CENTRAL											
Minnesota:											
Duluth	4	14	1	0	0	1	0	1	0	3	25
Minneapolis	35	82	7	23	4	5	0	0	0	2	109
St. Paul	27	23	8	0	0	2	1	1	0	15	58

[1] Pulmonary tuberculosis only.

City reports for week ended February 21, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL—continued											
Iowa:											
Davenport	3	1	2	2			0	0		1	
Des Moines	8	10	3	0			0	0		1	
Sioux City	2	0	1	0			0	0		0	
Waterloo	3	2	0	4			0	0		2	
Missouri:											
Kansas City	13	101	2	5	0	11	0	0	0	6	112
St. Joseph	3	5	0	0	0	1	0	0	0	1	34
St. Louis	27	116	2	8	0	16	0	0	0	5	246
North Dakota:											
Fargo	2	6	1	0	0	0	0	0	0	0	1
Grand Forks	1	0	1	0			0	0		0	
South Dakota:											
Aberdeen		2		0				0		2	
Sioux Falls	3	0	1	0	0	0	0	0	0	0	7
Nebraska:											
Lincoln	3	0	0	3	0	0	0	1	1	2	13
Omaha	6	5	2	17	0	2	1	0	0	2	45
Kansas:											
Topeka	1	0	1	0	0	1	0	0	0	1	10
Wichita	3	4	2	4	0	0	0	0	0	8	31
SOUTH ATLANTIC											
Delaware:											
Wilmington	2	1	0	0	0	0	0	1	0	1	32
Maryland:											
Baltimore	36	37	0	0	0	21	1	0	0	82	256
Cumberland	1	0	0	0			1	0			
Frederick	2	0	0	0	0	0	0	0	0		4
District of Col.:											
Washington	19	33	1	4	1	11	1	1	1	7	159
Virginia:											
Lynchburg	0	0	0	0	0	0	0	0	0	2	13
Norfolk	1	2	0	0	0	2	0	0	0	9	
Richmond	3	3	0	0	0	3	1	0	0	1	65
Roanoke	0	0	1	0	0	0	0	0	0	1	17
West Virginia:											
Charleston	1	1	1	0	0	2	1	0	0	3	16
Huntington	1	1	0	5			0	0		0	
Wheeling	1	0	0	0	0	0	1	0	0	0	20
North Carolina:											
Raleigh	1	0	0	4	0	1	0	0	0	1	16
Wilmington	1	0	0	5	0	1	1	0	0	1	13
Winston-Salem	1	0	0	7	0	2	0	0	0	3	23
South Carolina:											
Charleston	1	0	0	0	0	4	0	0	0	0	28
Columbia	0	0	0	0	0	0	0	1	0	3	18
Greenville	0	0	0	11	0	0	0	0	0	0	4
Georgia:											
Atlanta	4	2	3	2	0	4	0	0	2	4	
Brunswick	0	0	0	0	0	0	0	0	0		2
Savannah	1		0				0				
Florida:											
St. Petersburg	1	0	1	0	0	0	0	0	0	0	17
Tampa	0	0	0	0	0	1	1	1	0	0	36
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	1	0	0	0	2	1	0	0	0	27
Louisville	4	6	1	2	0	3	1	1	0	1	75
Tennessee:											
Memphis	2	9	2	2	0	4	0	3	0	1	70
Nashville	2	15	1	3	0	3	0	1	0	0	42
Alabama:											
Birmingham	2	7	0	84	1	8	1	0	0	4	97
Mobile	0	0	1	0	0	3	0	0	0	0	27
Montgomery	1	1	1	2	0	0	0	1	0	3	16

City reports for week ended February 21, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	2	1	1			0	0		6	
Little Rock	1	1	0	0	0	2	0	0	0	0	
Louisiana:											
New Orleans	4	12	3	0	0	20	2	8	3	8	210
Shreveport		0		0	0	3		0	0	0	32
Oklahoma:											
Oklahoma	2	6	4	0	0	2	0	0	0	0	24
Tulsa	1	0	2	0			1	0			
Texas:											
Dallas	1	4	3	0	0	3	0	0	0		54
Galveston	0	0	0	5	0	0	1	1	0	0	15
Houston	1	7	1	12	0	5	1	0	0	0	61
San Antonio	1	1	1	0	0	7	0	0	0	0	57
MOUNTAIN											
Montana:											
Billings	1	6	0	0	0	1	0	0	0	6	8
Great Falls	2	3	1	4	0	0	0	1	0	0	11
Helena	1	0	0	0	0	2	0	0	0		8
Missoula	1	1	0	0	0	0	0	0	0	0	4
Idaho:											
Boise	1	1	1	0	0	0	0	0	0	0	4
Colorado:											
Denver	13	12	3	0	0	9	0	0	0	2	79
Pueblo	1	0	1	0	0	4	1	2	1	0	11
New Mexico:											
Albuquerque	2	0	0	0	0	2	0	0	0	0	12
Utah:											
Salt Lake City	3	2	3	0	0	3	1	1	0	4	38
Nevada:											
Reno	1	1	1	5	0	0	0	0	0	0	4
PACIFIC											
Washington:											
Seattle	9	17	2	21			0	1		20	
Spokane	5	1	9	0			0	0		6	
Tacoma	3	0	3	2	0	1	0	0	0	2	26
Oregon:											
Portland	6	4	6	12	0	4	1	0	0	3	
California:											
Los Angeles	15	35	3	43	1	34	2	5	0	30	254
Sacramento	2	0	0	1	0	4	1	1	1	1	30
San Francisco	18	11	4	7	2	16	1	1	0	14	156

City reports for week ended February 21, 1925—Continued

Division, State, and city	Cerebrospinal meningitis: Cases	Cerebrospinal meningitis: Deaths	Lethargic encephalitis: Cases	Lethargic encephalitis: Deaths	Pellagra: Cases	Pellagra: Deaths	Poliomyelitis (infantile paralysis): Cases, estimated expectancy	Poliomyelitis (infantile paralysis): Cases	Poliomyelitis (infantile paralysis): Deaths
NEW ENGLAND									
New Hampshire:									
Concord	0	0	0	0	0	0	0	1	0
Massachusetts:									
Boston	1	0	4	2	0	0	0	1	1
Fall River	0	0	0	0	0	0	0	1	0
Springfield	1	1	0	0	0	0	0	0	0
Connecticut									
New Haven	0	0	1	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	0	0	9	5	0	0	1	1	0
Pennsylvania:									
Philadelphia	1	1	0	0	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cleveland	2	1	1	2	0	0	0	0	0
Indiana									
Indianapolis	0	1	0	0	0	0	0	0	0
Illinois:									
Chicago	2	3	1	0	0	0	0	0	0
Wisconsin									
Milwaukee	0	0	1	0	0	0	0	1	0
WEST NORTH CENTRAL									
Missouri.									
St. Louis	0	0	1	0	0	0	0	0	0
SOUTH ATLANTIC									
Delaware:									
Wilmington	0	0	0	0	0	0	0	0	2
Maryland.									
Baltimore	1	0	1	0	0	0	0	0	0
District of Columbia.									
Washington	0	0	1	0	0	0	0	0	0
South Carolina									
Columbia	0	0	0	0	0	1	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	0	0	0	0	1	1	0	0	0
WEST SOUTH CENTRAL									
Arkansas									
Little Rock	0	1	0	0	0	0	0	0	0
Louisiana:									
New Orleans	0	0	0	0	1	1	0	0	0
Oklahoma.									
Oklahoma	0	0	0	0	0	1	0	0	0
Texas									
Dallas	0	0	0	0	1	0	0	0	0
Houston	0	1	0	0	0	1	0	0	0
San Antonio	0	0	0	0	0	1	0	0	0
PACIFIC									
Oregon:									
Portland	1	0	0	0	0	0	0	0	0
California:									
San Francisco	1	0	0	0	0	0	0	0	1

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended February 21, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, December 14, 1924, to February 21, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Dec. 20	Dec 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21
Total	[2] 197	150	[2] 155	69	[3] 172	[3] 163	[4] 166	[3] 175	[3] 168	[5] 150
New England	221	189	258	256	170	171	199	191	246	241
Middle Atlantic	187	149	140	181	188	175	155	171	165	163
East North Central	185	134	151	132	141	130	[4] 135	145	132	123
West North Central	209	168	176	143	255	199	251	255	259	209
South Atlantic	150	134	146	173	[3] 106	[3] 138	128	[3] 153	[3] 183	[5] 160
East South Central	149	51	91	120	91	80	97	63	69	80
West South Central	195	116	148	144	195	162	148	176	162	125
Mountain	248	209	191	239	153	239	134	191	95	162
Pacific	[2] 207	226	[2] 129	194	206	223	293	270	180	165

MEASLES CASE RATES

	Dec. 20	Dec 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21
Total	[2] 143	105	[2] 158	215	[3] 141	[3] 213	[4] 214	[3] 254	[3] 297	[5] 384
New England	194	278	380	395	440	497	484	576	661	720
Middle Atlantic	115	235	121	169	157	187	205	205	287	373
East North Central	317	138	294	417	127	379	[4] 373	453	515	688
West North Central	19	10	10	19	12	27	21	17	31	27
South Atlantic	24	35	53	83	[3] 43	[3] 38	37	[3] 49	[3] 98	[5] 114
East South Central	11	0	17	29	46	74	91	51	74	51
West South Central	19	14	9	5	23	14	14	37	51	14
Mountain	57	19	115	134	267	248	286	782	153	620
Pacific	[2] 37	70	[2] 83	194	160	55	17	61	29	64

SCARLET FEVER CASE RATES

	Dec. 20	Dec 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21
Total	[2] 314	244	[2] 207	369	[3] 355	[3] 370	[4] 364	[3] 412	[3] 400	[5] 391
New England	552	512	609	661	561	596	534	614	564	606
Middle Atlantic	268	225	286	324	294	326	322	373	407	376
East North Central	311	230	243	383	375	369	[4] 379	426	397	432
West North Central	601	468	527	757	755	804	779	871	728	742
South Atlantic	213	132	203	160	[3] 243	[3] 189	185	[3] 255	[3] 277	[5] 166
East South Central	240	126	172	229	183	183	217	97	212	223
West South Central	185	65	83	148	116	195	204	162	121	125
Mountain	239	191	162	382	534	305	258	334	382	248
Pacific	[2] 134	133	[2] 138	189	183	220	226	258	177	186

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923

[2] Los Angeles, Calif., not included in calculating the rate. Report not received at time of going to press.

[3] Wilmington, Del., not included.

[4] Racine, Wis., not included.

[5] Savannah, Ga., not included.

Summary of weekly reports from cities, December 14, 1924, to February 21, 1925—Annual rates per 100,000 population—Continued

SMALLPOX CASE RATES

	Week ended—									
	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21
Total	[2] 42	41	[2] 40	57	[3] 58	[3] 70	[4] 67	[3] 76	[3] 79	[5] 66
New England	0	0	0	0	0	0	0	0	0	0
Middle Atlantic	2	2	• 3	3	10	6	9	2	4	2
East North Central	14	20	27	40	39	48	[4] 35	39	35	56
West North Central	209	205	129	220	193	180	195	145	193	126
South Atlantic	22	28	39	30	[3] 64	[3] 38	45	[3] 62	[3] 98	[5] 69
East South Central	314	183	372	395	217	675	652	823	675	532
West South Central	51	19	32	65	32	32	60	125	139	83
Mountain	29	48	48	29	57	95	48	29	162	86
Pacific	[2] 106	122	[2] 69	148	212	209	177	267	220	215

TYPHOID FEVER CASE RATES

	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21
Total	[2] 56	35	[2] 37	36	[3] 21	[3] 17	[4] 18	13	[3] 12	[5] 11
New England	30	17	25	15	25	20	7	30	20	0
Middle Atlantic	101	57	58	49	21	20	19	13	6	10
East North Central	33	24	28	23	23	11	[4] 10	8	6	6
West North Central	15	19	4	6	10	6	12	0	10	4
South Atlantic	30	37	41	55	[3] 21	[3] 11	37	[3] 17	[3] 20	[5] 8
East South Central	51	34	40	51	17	29	23	11	40	34
West South Central	56	28	37	70	70	42	60	23	46	42
Mountain	10	0	0	10	0	48	19	29	19	38
Pacific	[2] 14	15	[2] 5	26	6	15	3	17	12	23

INFLUENZA DEATH RATES

	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21
Total	[2] 16	15	19	21	[3] 22	[3] 22	[4] 23	[3] 30	[3] 28	[5] 30
New England	15	15	3	17	27	10	27	47	27	17
Middle Atlantic	17	14	21	20	18	20	16	24	22	21
East North Central	9	16	10	16	15	18	[4] 12	13	17	18
West North Central	9	7	9	13	2	20	15	20	11	22
South Atlantic	22	14	26	35	[3] 47	[3] 23	39	[3] 49	[3] 55	[5] 55
East South Central	23	51	63	46	46	63	74	69	63	74
West South Central	41	15	51	41	87	92	82	97	122	153
Mountain	48	10	38	19	29	10	38	57	57	57
Pacific	[2] 17	12	12	20	12	12	20	41	4	12

PNEUMONIA DEATH RATES

	Dec. 20	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21
Total	[2] 172	157	203	192	[3] 215	[3] 211	[4] 206	[3] 225	[3] 222	[5] 216
New England	134	114	174	122	157	216	241	211	239	241
Middle Atlantic	191	178	226	228	260	234	230	253	231	216
East North Central	146	126	165	152	152	142	[4] 145	164	168	184
West North Central	68	92	101	90	107	120	118	134	131	131
South Atlantic	248	205	250	246	[3] 294	[3] 275	252	[3] 315	[3] 270	[5] 253
East South Central	297	206	303	292	189	320	303	326	320	320
West South Central	163	229	341	260	449	362	229	352	464	408
Mountain	276	219	229	229	248	324	315	191	277	219
Pacific	[2] 86	147	188	184	163	208	217	196	192	213

[2] Los Angeles, Calif., not included in calculating the rate. Report not received at time of going to press.
[3] Wilmington, Del., not included. [4] Racine, Wis., not included. [5] Savannah, Ga., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,018
Mountain	9	9	546,445	546,445
Pacific	6	3	• 1,797,830	1,275,841

FOREIGN AND INSULAR

BRAZIL

Mortality, 1917–1924, inclusive—Bahia.—The following information in regard to mortality at Bahia, Brazil, has been taken from the annual report of the Director of Public Health:

Deaths, 1917–1924, inclusive

Year	Number of deaths	Year	Number of deaths
1917	4,947	1921	5,385
1918	5,996	1922	5,522
1919	8,946	1923	5,315
1920	6,330	1924	5,754

These figures are exclusive of stillbirths. The latest census, taken in 1920, gives the population as 283,422 inhabitants. Although the population has undoubtedly increased since that year, the present estimate of 320,000 may be subject to error and the mortality rate quoted (17.98) may be too low. The number of stillbirths reported is as follows: 1922—623 stillbirths; 1923—641; 1924—607.

Principal causes of death, 1924.—The principal causes of death at Bahia during the year 1924 were given as follows:

Disease	Deaths	Disease	Deaths
Bronchitis and broncho-pneumonia	388	Malaria	367
Diarrhea and enteritis, infantile	555	Tuberculosis, pulmonary	998
Dysentery	282	Typhoid fever	188
Heart disease	171		

Mortality from other diseases.—In addition, 14 deaths from beriberi, 2 from leprosy, 69 from meningitis, and 7 from plague were reported.

Yellow fever.—One death from yellow fever was reported, but this was not properly chargeable to the city, as it occurred on board a steamship on which a case was being transported from a coast town. The last case of yellow fever occurring at Bahia was reported in September, 1923.

ECUADOR

Plague—Smallpox—Guayaquil—January 16–31, 1925.—During the period January 16 to 31, 1925, 11 cases of plague with 3 deaths, and

one case of smallpox were reported at Guayaquil, Ecuador. During the same period, out of 10,839 rats taken at Guayaquil, 40 rats were found plague-infected.

ITALY

Mortality, 1915–1924, inclusive—Mortality from tuberculosis—Genoa.—During the period 1915–1924, inclusive, 55,698 deaths from all causes were reported for the city of Genoa, Italy, the greatest number of deaths, viz, 8,826, being reported for the year 1918 (population, 317,093), and the lowest, viz, 4,641 (population, 328,200) for the year 1924. The total number of deaths from tuberculosis reported was 6,527, the greatest number, viz, 873, being for the year 1918, and the lowest, viz, 564, for the year 1924.

LITHUANIA

Typhoid fever—Typhus fever—April–December, 1924.—Typhoid fever and typhus fever have been reported in the Republic of Lithuania as follows: April–June, 1924: Typhoid fever, 141 cases with 6 deaths; typhus fever, 202 cases with 12 deaths. July–December, 1924; Typhoid fever, 436 cases with 18 deaths; typhus fever, 60 cases with 4 deaths. Population, 2,028,972.

PANAMA CANAL

Communicable diseases—January, 1925.—During the month of January, 1925, communicable diseases were reported in the Canal Zone, Colon, and Panama, as follows:

Disease	Canal Zone	Colon	Panama	Non-resident	Total
Chicken pox	6	1	24		31
Diphtheria		1	3		4
Dysentery	1		4	1	6
Hookworm disease	1	5	44	56	106
Malaria	86	2	18	43	149
Measles	4		5		9
Meningitis			1		1
Mumps	1				1
Pneumonia		2	18		20
Tuberculosis	4	4	21		29
Typhoid fever				2	2
Whooping cough	34	14	4		52

PARAGUAY

Summary of work of sanitary campaign, 1924.—During the year 1924, the work of the sanitary campaign undertaken in Paraguay against hookworm infection was reported for Asuncion, Guarambare, Ita, and Itaugua, as follows: Total number of treatments, 51,964, in a total population of 74,183 (white, 37,144). The number of persons found positive for *uncinaria* was 9,033; for other parasites, 1,041, the total examined for parasites being 13,010. The total number of houses inspected was 11,826, of which 2,367 were found to

have sanitary latrines; 1,751 new latrines were constructed. The number of conferences and lectures given was 343, the attendance being 24,159. There were reported 4,568 vaccinations against smallpox.

PERSIA

Mortality—Smallpox, Typhoid fever, Typhus fever—April 20-December 21, 1924.—During the period April 20 to December 21, 1924, 12 deaths from smallpox, 120 deaths from typhoid fever, and 4 deaths from typhus fever were reported at Teheran, Persia. Population, estimated, 250,000; census of 1922, 210,000.

RUSSIA

Malaria—Ukraine—January-October, 1924.—The following information, transmitted from Kharkov, Russia, shows that 829,147 cases of malaria were notified in the Ukraine, Russia, from January to October, 1924, inclusive. The greatest prevalence of the disease was stated to have been the Donets and Yekaterinoslav Provinces.

UNION OF SOUTH AFRICA

Plague—January 4-17, 1925—Infection among wild rodents.—Plague has been reported in the Union of South Africa as follows: January 4 to 10, 1925—4 cases, 1 death, occurring in natives and on farms; January 11 to 17, 1925—6 cases (one fatal, white), with 2 deaths, occurring on farms. Spread of plague infection among wild rodents has been shown to have occurred from the Liebensberg Vlie River and Wilge Valleys in the Frankfort district [1] to the Vaal River near Villiers and eastward as far as the Standerton Town Commonage and on both the north and south sides of the Vaal River.

Suspect cases previously reported proved negative.—The deaths of two Europeans, husband and wife, on farms in Boshof District, reported for weeks ended December 27, 1924, and January 3, 1925, were proved negative for plague and it was concluded that they were due to acute pneumonia. For distribution of plague occurrence according to localities, see page 532.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended March 13, 1925 [2]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo	Jan. 18-24	1	1	
India				Dec. 28, 1924-Jan. 3, 1925: Cases, 2,245; deaths, 1,327.
Calcutta	Jan. 11-17	10	10	
Madras	Jan. 18-24	20	19	

[1] Public Health Reports, Feb. 20, 1925, p. 392.
[2] From medical officers of the Public Health Service, American consuls, and other sources.

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CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended March 13, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
British East Africa:				
Kenya—				
Tanganyika	Dec. 7-27	14	10	
Uganda	Nov. 1-30	62	58	
Ceylon:				
Colombo	Jan. 18-24		1	
Ecuador:				
Guayaquil	Jan. 16-31	11	3	Plague rats: 40 out of 10,839 rats taken.
India				Dec. 28, 1924-Jan. 3, 1925: Cases, 2,785; deaths, 2,375.
Bombay	Jan. 11-17	1	1	
Madras	Dec. 28-Jan. 3	157	108	
Indo-China:				
Saigon	Jan. 11-17	2	1	Including 100 square kilometers of surrounding territory.
Java:				
East Java—				
Soerabaya	Dec. 21-27	5	6	
West Java—				
Cheribon	Nov. 25-Dec. 22		67	District.
Pekalongan	do		120	District. At two localities.
Straits Settlements:				
Singapore	Jan. 11-17	2	1	
Syria:				
Beirut	Jan. 11-20	1		
Union of South Africa				Jan. 4-17, 1925: Cases, 10; deaths, 3. Native—cases, 9; deaths, 2. White—one case, one death.
Cape Province—				
De Aar District	Jan. 4-10	2		Natives. On farms.
Orange Free State—				
Bloemfontein District	Jan. 11 17	1	1	Native. On farm.
Steynsburg District	Jan. 4-10	1		Native. On farm. Province not stated.
Transvaal—				
Boshof District	Jan. 11-17	5	1	Native, 4 cases; white, one fatal case. On farms.
Smithfield	Jan. 11-17	1		

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Jan. 1-31	5		
Canada:				
British Columbia—				
Vancouver	Feb. 15-21	27		
Manitoba—				
Winnipeg	Feb. 21-27	1		
Ceylon:				
Colombo	Jan. 18-24	2		
China:				
Amoy	Jan. 4-17			Present.
Hongkong	Dec. 28-Jan. 3	1	1	
Shanghai	Jan. 18-24		1	Chinese.
Chosen:				
Seoul	Dec. 1-31	1		
Egypt:				
Alexandria	Jan. 15-28	7		
India				Dec. 28, 1924-Jan. 3, 1925: Cases, 1,893; deaths, 471.
Bombay	Jan. 11-17	11	8	
Calcutta	Jan. 11-17	86	58	
Do	Mar. 5			Reported epidemic.
Karachi	Jan. 25-31	13	3	
Madras	Jan. 18-24	45	8	
Indo-China:				
Saigon	Dec. 28-Jan. 3	6		
Do	Jan. 4-10	3	1	
Java:				
East Java—				
Soerabaya	Dec. 21-27	49	11	
Persia:				
Teheran				Sept. 23-Dec. 21, 1924: Deaths, 12.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended March 13, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Portugal:				
Lisbon	Feb. 1-7	6		
Spain:				
Malaga	Feb. 8-14		5	
Syria:				
Aleppo	Feb. 1-7	15	8	Estimated.
Tunis:				
Tunis	Feb. 5-18	33	61	
Union of South Africa:				
Cape Province				Jan 11-17, 1925: Outbreaks.
Transvaal				Jan. 4-10, 1925: Outbreaks.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Jan. 1-31	3	3	
Greece:				
Saloniki	Jan. 25-31	1		
Poland				Nov. 16-Dec 6, 1924: Cases, 147; deaths, 5.
Union of South Africa:				
Cape Province				Jan. 4-17, 1925: Outbreaks.
Orange Free State				Jan. 11-17, 1925. Outbreaks.

Reports Received from December 27, 1924, to March 6, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Nov. 29, 1924: Cases, 9; deaths, 8.
Colombo	Nov. 16-22	1		
Do	Jan. 11-17	1	1	
India				Oct 19-Dec. 27, 1924. Cases, 24,919; deaths, 14,901.
Bombay	Nov. 23-Dec. 20	4	4	
Calcutta	Oct. 26-Jan. 3	59	51	
Do	Jan 4-10	10	10	
Madras	Nov. 16-Jan. 3	69	40	
Do	Jan. 4-17	54	34	
Rangoon	Nov. 9-Dec. 20	9	2	
Do	Jan. 4-10	4	3	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 14; deaths, 10.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept. 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov. 30-Dec. 6	1		
Siam:				
Bangkok	Nov. 9-29	4	2	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 2-Jan. 3	30	13	
British East Africa:				
Tanganyika Territory	Nov 23-29	3		
Uganda	Aug.-Oct., 1924	180	153	
Canary Islands:				
Las Palmas				Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec. 26	3	1	Vicinity of Santa Cruz de Teneriffe.
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 6, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-Jan. 3	12	9	
Do	Jan. 4-17	1	3	One plague rodent.
China:				
Foochow	Dec. 28-Jan. 3			Present.
Nanking	Nov. 23-Jan. 31			Do.
Shing Hsien	Oct., 1924		790	
Ecuador:				
Chimborazo Province—				
Alausi District	Jan. 14		14	At two localities on Guayaquil and Quito Railway.
Guayaquil	Nov. 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92.
Do	Jan. 1-15	6	4	Rats taken, 8,248; rats found infected, 28.
Egypt				Year 1924: Cases, 373. Jan. 1-28, 1925: Cases, 15.
City—				
Alexandria	Year 1924	2	2	Last case, Nov. 26.
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec. 7.
Suez	do	20	13	Last case, Dec. 20.
Province—				
Dakhalia	Jan. 1-8	1	1	
Kalioubiah	do	3		
Menoufieh	do	7	3	
Gold Coast				Sept.-Oct., 1924: Deaths, 42.
Hawaii:				
Honokaa	Nov. 4	1		Plague-infected rodents found Dec. 9, 1924, and Jan. 15, 1925.
India				Oct. 19-Dec. 27, 1924: Cases, 25,369; deaths, 19,130.
Bombay	Nov. 22-Jan. 3	4	3	
Do	Jan. 4-10	1	1	
Karachi	Nov. 30-Dec. 6	2	1	
Do	Jan. 4-24	10	9	
Madras Presidency	Nov. 23-Dec. 20	528	379	
Rangoon	Oct. 26-Jan. 3	26	25	
Do	Jan. 4-10	8	6	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 25; deaths, 20.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Japan	Aug. 10-Nov. 15	12		
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri; epidemic.
Pare	Nov. 29			Do.
Soerabaya	Nov. 16-Dec. 13	53	55	
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov. 18-24		13	
Pekalongan	Oct. 14-Nov. 3		29	
Do	Nov. 18-24		13	
Tegal	Oct. 14-Nov. 24		10	
Madagascar				Nov. 1-Dec. 15, 1924: Cases, 254; deaths, 218.
Provinces—				
Itasy	Nov. 1-Dec. 15	4	2	
Moramanga	do	49	34	
Tananarive	Oct. 16-Dec. 15	223	208	Tananarive City (interior), Oct. 16-Nov. 30: Cases, 8; deaths, 7.
Towns (ports)—				
Fort Dauphin	Nov. 1-Dec. 15	12	5	
Majunga	Nov. 1-30	1	1	
Tamatave	do	1	1	
Mauritius Island				Sept. 7-Oct. 18, 1924: Cases, 60; deaths, 53.
Nigeria				Aug.-Oct., 1924: Cases, 309; deaths, 256.
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Siberia:				
Transbaikalia—				
Turga	Oct., 1924		3	On Chita Railroad.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 6, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Do	Jan. 4-10	1	1	
Turkey:				
Constantinople	Jan. 9-15	5	5	
Union of South Africa:				
Cape Province—				
De Aar District	Nov. 22-Jan. 3	4	1	Native.
Dronfield	Dec. 7-13	1		8 miles from Kimberley.
Kimberley	Dec. 7-27	3	2	
Maraisburg District	Nov. 22-Dec. 13	4	2	Bubonic, on Goedshoop Farm.
Orange Free State—				
Bloemfontein District	Dec. 21-Jan. 3	5	2	
Ficksburg District	Dec. 28-Jan. 3	1	1	
Hoopstad District	Dec. 7-13	1		On farm.
Kroonstad District	Nov. 22-Jan. 3	2	1	
Philippolis District	Dec. 21-27	1		
Vredefort District	Dec. 7-20	2	2	On farms.
Transvaal—				
Boshof District	Dec. 7-Jan. 3	3	3	On farm.
Wolmaransstad District.	Nov. 22-29	1	1	On Farm Wolverspruit Vaal River. Native.
On vessel:				
S. S. Conde				At Marseille, France, Nov. 6, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 372.
Arabia:				
Aden	Jan. 25-31	1		Imported.
Bolivia:				
La Paz	Nov. 1-Dec. 31	20	11	
Brazil:				
Pernambuco	Nov. 9-Jan. 3	100	27	
British East Africa:				
Uganda—				
Entebbe	Oct. 1-31	4		
British South Africa:				
Northern Rhodesia	Oct. 28-Dec. 15	57	2	
Canada:				
British Columbia—				
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-Feb. 14	135		
Victoria	Jan. 18-Feb. 7	2		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-Feb. 14	29		
New Brunswick—				
Bonaventure and Gaspe Counties.	Jan. 1-31	1		
Northumberland	Feb. 8-14	1		County.
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33.
Hamilton	Jan. 24-30	1		Dec. 28, 1924, to Jan. 31, 1925: Cases, 27.
Ceylon				July 27-Nov. 29, 1924: Cases, 27; deaths, 1.
China:				
Amoy	Nov. 9-Jan. 24			Present.
Antung	Nov. 17-Dec. 28	5		
Do	Jan. 5-18	4		
Foochow	Nov. 2-Jan. 27			Do.
Hongkong	Nov. 9-Dec. 6	5	1	
Nanking	Jan. 4-17			Do.
Shanghai	Dec. 7-27	1	2	
Czechoslovakia				Apr.-June, 1924: Case, 1; occurring in Province of Moravia.
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 6, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Egypt:				
Alexandria	Nov. 12-Dec. 31	10		
Do	Jan. 8-14	1		
Esthonia				Dec. 1-31, 1924: Cases, 2.
France				July-Nov., 1924: Cases, 69.
Germany				June 29-Nov. 8, 1924: Cases, 7.
Gibraltar	Dec. 8-14	1		
Gold Coast				July-Sept., 1924: Cases, 82; deaths, 1.
Great Britain:				
England and Wales	Nov. 23-Jan. 3	472		
Do	Jan. 4-24	351		
Newcastle-on-Tyne	Jan. 18-Feb. 7	5		
Greece				Jan.-June, 1924: Cases, 170; deaths, 27.
Do				July-Nov., 1924: Cases, 36; deaths, 26.
Saloniki	Nov. 11-Dec. 22	3		
India				Oct. 19-Dec. 27, 1924: Cases, 10,671; deaths, 2,386.
Bombay	Nov. 2-Jan. 3	30	18	
Do	Jan. 4-10	6	3	
Calcutta	Oct. 26-Jan. 3	307	170	
Do	Jan 4-10	82	43	
Karachi	Nov. 16-Jan. 3	16	2	
Do	Jan. 4-17	13		
Madras	Nov. 16-Jan. 3	122	48	
Do	Jan. 4-17	28	15	
Rangoon	Oct. 26-Jan. 3	86	28	
Do	Jan 4-10	33	4	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 223; deaths, 76.
Province—				
Anam	Aug. 1-Sept. 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov. 16-Dec. 27	11	5	Including 100 sq. km. of surrounding country.
Tonkin	Aug. 1-Sept. 30	19	7	
Iraq:				
Bagdad	Nov. 9-Dec. 27	2	1	
Italy				June 29-Dec. 6, 1924: Cases, 61.
Jamaica				Nov 30-Jan 3: Cases, 50. Reported as alastrim.
Do				Jan. 4-31, 1925 Cases, 43. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim.
Japan				Aug 1-Nov. 15, 1924: Cases, 4.
Java:				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in two native villages.
Soerabaya	Oct. 19-Dec. 20	613	197	
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct 21-Nov. 14	2		
Do	Dec. 20-Jan. 2	19	4	
Cheribon	Oct. 14-Nov. 24	15		
Pekalongan	do	22		
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5.
Mexico:				
Durango	Dec. 1-31		5	
Do	Jan. 1-31		5	Town and district.
Guadalajara	Dec. 23-29		1	
Do	Jan. 6-12		1	
Mexico City	Nov. 23-Dec. 27	5		
Do	Jan. 11-31	5		
Monterey				Jan. 24, 1925: Outbreak.
Salina Cruz	Dec. 1-31	1	1	
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-Feb. 10	23	8	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan, 5-Feb. 15		25	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 6, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Nigeria				Jan.-June, 1924: Cases, 357; deaths, 87.
Do				July-Oct., 1924; Cases, 10; deaths, 2.
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept. 21-Nov. 29, 1924: Cases, 19; deaths, 2.
Portugal:				
Lisbon	Dec. 7- Jan. 3	17		
Do	Jan. 4-31	39		
Oporto	Nov. 30-Dec. 27	3	2	
Do	Jan. 11-17	1		
Russia				Jan-June, 1924: Cases, 9,683, July-Sept., 1924: Cases, 1,251.
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Cadiz	Nov. 1-Dec. 31		51	
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-Feb 7		58	
Valencia	Nov. 30-Dec. 6	2		
Switzerland:				
Lucerne	Nov. 1-Dec. 31	19		
Syria:				
Aleppo	Nov. 23-Dec. 27	13		
Do	Jan. 4-31	30	7	
Damascus	Jan. 6-13	2		
Tunis:				
Tunis	Nov. 25-Dec. 29	42	35	
Do	Jan. 1-14		29	
Do	Jan. 22-Feb. 4		32	
Turkey:				
Constantinople	Dec. 13-19	5		
Union of South Africa				Nov. 1-30, 1924: Cases, 7.
Cape Province	Nov. 9-Jan. 3			Outbreaks.
Orange Free State	Nov. 2-8			Do.
Transvaal	Nov. 9-Dec. 20			Do.
Uruguay				Jan.-June, 1924: Cases, 101; deaths, 2.
Do				July, 1924: Cases, 25; deaths, 3.
On vessel:				
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 101; deaths, 14.
Algiers	Nov. 1-Dec. 31	5	1	
Bolivia:				
La Paz	do	3		
Bulgaria				Jan.-June 1924: Cases, 191; deaths, 28.
Do				July-Oct., 1924: Cases, 5.
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Do	Jan. 6-12		2	
Iquique	Nov. 30-Dec. 1		2	
Talcahuano	Nov. 16-Dec. 20		5	
Do	Jan. 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-31		4	
Chosen:				
Seoul	Nov. 1-30	1	1	
Egypt:				
Alexandria	Dec. 3-9	1	1	
Cairo	Oct. 1-Dec. 16	12	8	
Esthonia				Dec. 1-31, 1924: Cases, 5.
France				July-Oct., 1924: Cases, 7.
Gold Coast				Oct. 1-31, 1924: 1 case.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 6, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Greece				May-June, 1924: Cases, 116; deaths, 8.
Do				July-Nov., 1924: Cases, 35; deaths, 4.
Saloniki	Nov. 17-Dec. 15	3	2	
Japan				Aug. 1-Nov. 15, 1924: Cases, 2.
Latvia				Oct.-Nov., 1924: Cases, 16.
Lithuania				Aug.-Oct., 1924: Cases, 15; deaths, 1.
Mexico:				
Durango	Dec. 1-31		1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District.
Do	Jan. 11-31	29		Do.
Palestine				Nov. 12-Dec. 8, 1924: Cases, 7.
Ekron	Dec. 23-29	1		
Jerusalem	do	2		
Do	Jan. 20-26	1		
Mikveh Israel	do	1		
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept. 28-Nov. 15, 1924: Cases, 232; deaths, 17.
Portugal:				
Lisbon	Dec. 29-Jan. 4		2	
Oporto	Jan. 4-Feb. 7	2		
Rumania				Jan.-June, 1924: Cases, 2,906; deaths, 328.
Do				July-Aug., 1924: Cases, 89; deaths, 12.
Constanza	Dec. 1-10	1		
Russia				Jan. 1-June 30, 1924: Cases, 92,000. July-Sept., 1924: Cases: 5,225.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Sweden:				
Goteborg	Jan. 18-24	1		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Turkey:				
Constantinople	Nov. 15-Dec. 19	6	1	
Do	Jan. 2-22	6		
Union of South Africa:				
Cape Province	Nov. 1-30	89	16	Dec. 21-Jan. 3: Outbreaks.
East London	Nov. 16-22	1		Dec. 14-20: Outbreaks.
Natal	Nov. 1-30	105	45	
Orange Free State	do	21	2	Dec. 7-Jan. 3. Outbreaks.
Transvaal	do	18	3	
Yugoslavia				Aug. 3-Oct. 18, 1924: Cases, 17; deaths, 2.
Belgrade	Nov. 24-Dec. 7	4		

YELLOW FEVER

Gold Coast	October, 1924	3	3	

×

TREASURY DEPARTMENT

PUBLIC HEALTH REPORTS

ISSUED WEEKLY

BY THE UNITED STATES PUBLIC HEALTH SERVICE

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SPECIAL ARTICLES

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UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of the public health.

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CONTENTS

PUBLIC HEALTH REPORTS

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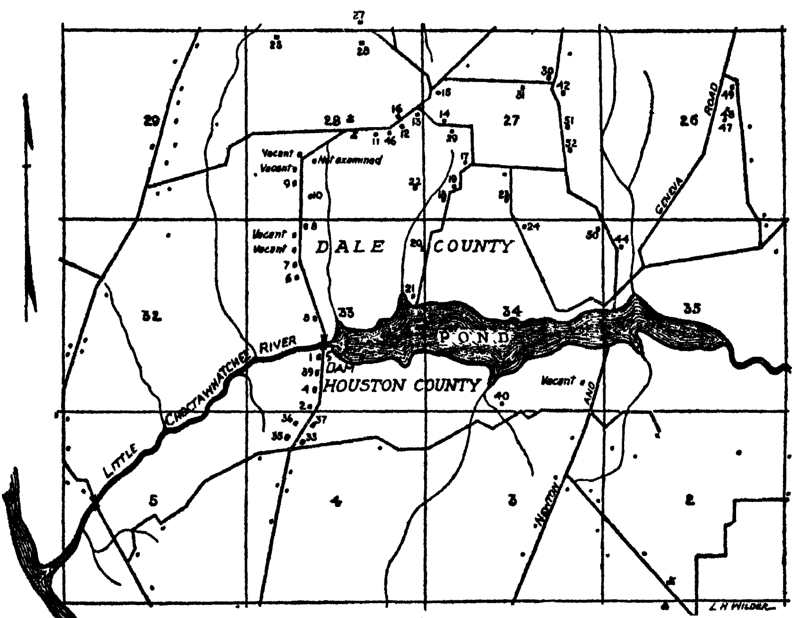
EIGHT WEEKS' QUININE TREATMENT FOR MALARIA

A Report of Results as Observed in a Community with a High Malaria Incidence, in Dale County, Alabama [1]

By T. H. D. Griffitts, Epidemiologist, United State Public Health Service

History of malaria.—In January, 1921, a hydroelectric power company completed a dam across the Little Choctawhatchee River at Golden Bridge, 6 miles from Newton, Dale County, Alabama, which created a pond covering approximately 200 acres. The greater portion of the land flooded was previously more or less heavily



MAP

SHOWING DWELLINGS LOCATED NEAR POND OF THE HOUSTON POWER CO.
GOLDEN BRIDGE, DALE COUNTY, ALA.
SCALE: 3" = 1 MILE

wooded with pine, magnolia, and bay, and there was much underbrush and many tree tops and logs remained from trees felled years before. No clearing or cleaning of bed and banks of the

[1] Editorial note: The study here presented illustrates how, in the presence of a complicating hookworm disease and of abundant opportunity for malarial reinfection, standard treatment for malaria may restrict the clinical manifestations of the disease without, however, accomplishing the desired result of eradication. Attention is invited to the fact that it should not be interpreted as invalidating the employment of quinine as an antimalaria procedure under suitable circumstances, but that it does emphasize the need for concurrent measures where certain serious complications are present.

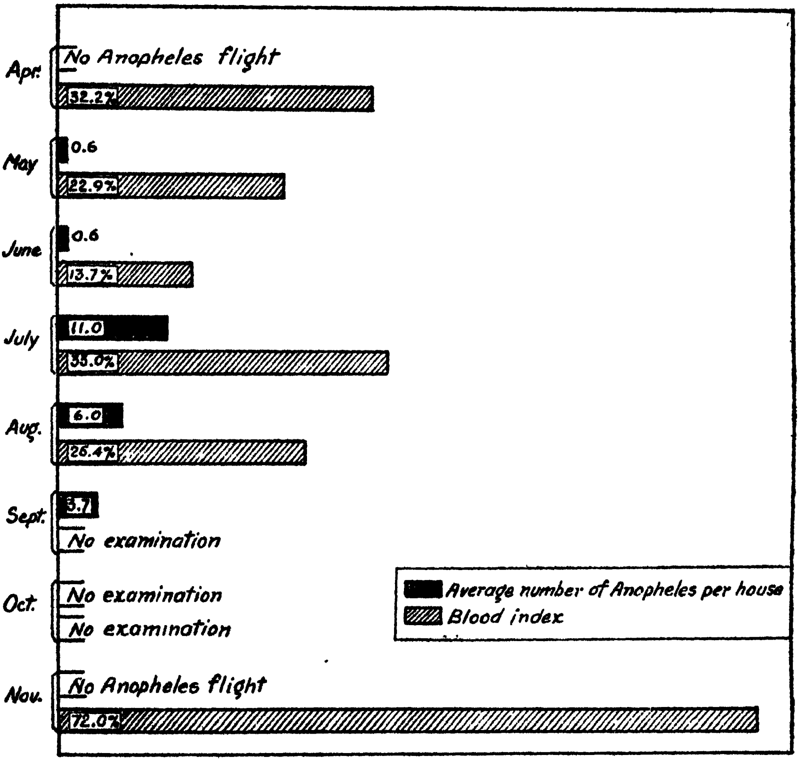
reservoir was done prior to the impoundage. Top minnows, *Gambusia affinis* and *Fundulus notii*, readily established themselves in great numbers, as a result of their previous existence in permanent small ponds in the area. Physicians who have practised in this locality for several years stated that malaria had existed endemically here before the creation of the new pond, or reservoir. In a house-to-house canvass during the second year (1922) after the pond had been created, representatives of the State board of health were able to get histories of malaria prior to 1921 in only 2 of 41 families. The year 1921, however, brought a serious prevalence of malaria. By fall of that year, according to histories elicited by a house-to-house canvass, there occurred 99 cases of malaria among the 168 people in the 41 families, or a history index of 59 per cent. Most of the cases occurred in the late summer and fall. In 1922 (September), histories of malaria occurring during that year were obtained in 161 (one death) out of 203 people living within 1 mile of the pond. In other words, 79 per cent of this population gave histories of attacks of malaria in 1922 (second year of the pond).

Status of the population.—Fourteen, or about 34 per cent, of the 41 families living within a mile of the pond own their homes, while the remaining 27 (66 per cent) are the more or less shifting tenant type, practically all of whom are living under poor conditions as regards housing, food, and social relations. There is not a house in the area effectively screened against mosquitoes, and 90 per cent of the houses have practically no screening. It is believed that there is a high rate of hookworm disease. Examination of feces was made in only seven cases, five of which were positive. Of the 41 families, 38 are white and 3 are negroes. The farms are small, and cotton is the main crop. There is one school and one church, both located within one-half mile of the pond.

Treatment of cases in 1922.—Representatives of the State board of health investigated conditions about the Golden Bridge Pond in August and September, 1922, and on September 9 began the distribution of quinine for eight weeks' treatment. The State epidemiologist personally visited the families where cases had occurred, left a week's supply of quinine each time, and gave explicit instructions as to the taking of the quinine. The record shows that quinine was supplied to members of 67 families (some living more than a mile from the pond). It was stated that about 90 per cent of the patients took the entire treatment faithfully. On October 13 the last supply of treatments was given out (two weeks' supply), and at that time it was reported that there were no cases of malaria. This statement was based on the absence of clinical cases, no blood examinations being made.

MALARIA IN 1923

Infections found early in 1923.—On April 26–28, 1923, blood specimens (thick, "puddled" smears) were taken from 87 persons living on the Dale County side of the pond, all of whom had lived within 1 mile of the pond during the malaria transmission season of 1922. Up to that time there had been no complaints of mosquitoes that season, nor had repeated examinations of houses within the infectible area shown any anophelines in the houses. Of the 87 specimens, 28, or 32.2 per cent, were positive for malaria parasites, as follows: Tertian 17, estivo-autumnal 6, mixed tertian and estivo-autumnal 4, quartan 1. As to carriers at this time, 8 specimens showed crescents, 4 of which were in simple infections and 4 in mixed tertian and estivo-autumnal infections. In the simple tertian infections there were 8 that showed gametocytes, and in all of these there were also rings or schizonts. Therefore, of these cases, which are regarded as "carried-over" infections from the previous season, 16, or 57.1 per cent, were known gametocyte carriers before the advent of any evidence of flight of *Anopheles quadrimaculatus*.



Relation of house infestation by Anopheles to blood index for certain months in 1923

Succeeding blood indices.—A month later (May 24–26), thick smears were again taken from 2 persons who were negative in the April index and from persons not reached in April. There were 49 of these specimens, 11 (22.4 per cent) of which were positive, as follows: Tertian 8, estivo-autumnal 1, mixed tertian and estivo-autumnal 2. Six showed gametocytes (crescents 3, tertian gametocytes 3). Excluding 12 persons who had moved to this area since the preceding season, and 1 baby 4 months old—all of whom were found to be negative on blood examination—the blood index was 29.7, instead of 22.4.

On June 6, blood specimens (thick) were taken from 51 persons living on the Houston County side of the pond. Of the 51 specimens, 7, (13.7 per cent) were found positive, as follows: Tertian 3, estivo-autumnal 4. There were 2 with gametocytes, both crescents. Those persons found infected were given the 8 weeks' treatment under the direction of the county health officer of Houston County and are not included in the report on the use of quinine in this paper.

On July 23, thick and thin specimens were taken from an additional population opposite "live" water of the pond; but practically all lived within a mile of the upper limits of the quiet water. There were 39 of these specimens. Thirteen (33 per cent) were positive by the thick and only 7 (18 per cent) by the thin films. As to species of parasites in the 13 positives, 12 were tertian (1 with gametocytes) and 1 was estivo-autumnal (crescents).

ADMINISTRATION OF QUININE [2]

Impressed with the seriousness of the epidemic, the probability of an even higher morbidity in 1924 than during the preceding year (notwithstanding the fact that the power company was actively carrying out suggested measures for the reduction of *Anopheles* production on the pond), and considering the poor economic condition of the population, the State health officer of Alabama determined to supply quinine without cost to the people living in the affected area who would promise to take the full treatment according to instructions. Dale County has no health unit, but Houston County has; and for this reason quinine was distributed in Houston County under the direction of the county health officer. Only the Dale County cases, all white, are herein considered.

[2] The dosage and method of treatment employed were as follows: For the acute attack, 10 grains of quinine sulphate by mouth 3 times a day for a period of at least three or four days, to be followed by 10 grains every night before retiring for a period of 8 weeks. For infected persons not having acute symptoms at the time, only the 8 weeks' treatment. Doses for children: Under 1 year, ½ grain; 1 year, 1 grain; 2 years, 2 grains; 3 and 4 years, 3 grains; 5, 6, and 7 years, 4 grains; 8, 9, and 10 years, 6 grains; 11, 12, 13 and 14 years, 8 grains, 15 and older, 10 grains. In most of the cases in this series having acute symptoms, the 30-grains-per-day treatment was continued longer than 4 days.

Method of quinine distribution.—From June 19 to September 3, Mr. T. D. Rivers, medical student, was engaged continuously to distribute quinine, to instruct the people how to take it during the eight weeks' course, and to keep a continuous and careful check on how well the instructions were being complied with. The writer exercised general supervision over and direction of the work. For adult patients, freshly filled 5-grain capsules were supplied, and small children were given quinine in syrup of yerba santa. Each case was visited every three days or oftener and enough quinine was left to last until the next visit. An adult member of the family, usually the mother, was given explicit instructions as to the administration. Mr. Rivers was peculiarly well adapted for the work, and at once had the confidence and friendship of the people. It is believed that the best cooperation possible among a people of this character was secured.

Table 1 presents data on the portion of the population that verbally agreed to take the full quinine treatment according to instructions and did take it in varying amounts from 50 to 99 per cent of the total eight weeks' treatment. Of the 74 people who undertook the treatment, the average amount of the complete treatment actually taken was 88.6 per cent. Twenty-four persons each took 99 per cent of the prescribed eight weeks' treatment. Of these, malaria was previously diagnosed by positive blood examination in 15 cases (62.5 per cent), and in 9 cases treatment was given on account of clinical malaria. Following the treatments, and within 10 days thereafter, examination of thick blood specimens from the 24 showed four positives (16.7 per cent,) as follows: Tertian 3, estivo-autumnal 1. In the same group there were 17 positives (70.8 per cent) on the following November 13. Of the latter, 2 were tertian, 12 estivo-autumnal, and 3 mixed tertian and estivo-autumnal (thick smears). This represented an increase of only two tertian infections during the period, against 14 estivo-autumnal.

TABLE 1.—*Cases given quinine treatment*

Case No.[1]	Color	Sex	Age	Results of blood examination	Eight weeks' treatment: Date completed	Per cent taken	Paroxysms after begun	Subsequent blood examinations: Aug. 25–26	Nov. 13
5a[1]	White	Male	49	T. s. and Cr.[2]	Aug. 18	99	0	Neg.	T. r.
5b	do	Female	51	Neg. (clinical)[3]	do	99	0	Neg.	Neg.
5c	do	Male	14	T. s.	do	99	0	Neg.	T. and E. a. r. and Cr.
5d	do	do	14	Neg (clinical)	do	99	0	Neg.	E. a. r. and Cr.
5e	do	do	11	T. r. and gam.	do	99	0	Neg.	T. and E. a r.
5f	do	do	26	T. s.	do	98	0		

[1] Numerals refer to houses and letters to members of family. House numbers in this table correspond to house numbers on the map.
[2] T. s.=tertian schizonts; T. r.=tertian rings; T. gam.=tertian gametocytes; E. a. r.=estivo-autumnal rings; Cr.=crescents.
[3] Clinically positive.

TABLE 1.—*Cases given quinine treatment*—Continued

Case No.	Color	Sex	Age	Results of blood examination	Eight weeks' treatment			Subsequent blood examinations	
					Date completed	Per cent taken	Paroxysms after begun	Aug. 25–26	Nov. 13
5g	White	Female	23	T. and E. a. r.	Aug. 18	99	0	Neg.	Neg.
5h	do	do	17	T. r. and gam.	do	99	0	T. r.	T. r. and gam.
5i	do	do	15	T. r. and Cr.	do	99	0	T. r.	T. r. and E. a. r.
6a	do	Male	49	Neg. (clinical)	Aug. 21	75	1		
6b	do	Female	40	Quartan bands	Aug. 19	99	0	T. s.	E. a. r. and Cr.
6c	do	Male	10	T. r. and E. a. r.	do	90	3	Neg.	E. a. r. and Cr.
6d	do	Female	12	T. s. and gam.	do	90	0	Neg.	Cr.
6e	do	do	15	do	do	85	0	Neg.	Cr.
6f	do	do	8	Neg. (clinical)	do	90	0	Neg.	Cr.
6g	do	do	17	T. r. and s.	do	85	0	Neg.	E. a. r. and Cr.
6h	do	Male	22	Neg. (clinical)	Aug. 21	90	0	Neg.	E. a. r. and Cr.
14b	do	Female	35	(Clinical)	Aug. 23	80	0	T. r.	E. a. r. and Cr.
14c	do	Male	14	Neg. (clinical)	Aug. 21	80	0	T. r.	Neg.
14e	do	do	8	(Clinical)	Aug. 25	80	0	Neg.	E. a. r. and Cr.
14f	do	Female	6	do		80	0		E. a. r. and Cr.
14g	do	do	4	do		60			E. a. r. and Cr.
17b	do	do	59	T. s. and gam.	Aug. 20	90	0	Neg.	E. a. r. and Cr.
17c	do	do	17	Neg. (clinical)		50		Neg.	E. a. r. and Cr.
17d	do	do	15	do	Aug. 20	90	0	T. r.	E. a. r. and Cr.
18a	do	Male	51	T. r.	do	90	0	Neg.	
18c	do	do	17	do	do	95	0	Neg.	Neg.
20a	do	do	61	Neg. (clinical)	Aug. 25	90	0	Neg.	Cr.
20b	do	Female	26	do	Aug. 20	95	0	Neg.	E. a. r. and Cr.
20c	do	do	5 mo.	do		95		Cr.	E. a. r. and Cr.
21a	do	Male	40	do	Aug. 21	90	2	Neg.	E. a. r. and Cr.
21b	do	Female	34	do	do	99	0	Neg.	Cr.
21d	do	do	8	do	do	90	0	Neg.	E. a. r. and Cr.
21e	do	do	3	do		99		E. a. r.	E. a. r. and Cr.
22a	do	Male	31	T. s. and gam.	Aug. 20	99	0	Neg.	E. a. r. and Cr.
22b	do	Female	34	Neg. (clinical)	do	99	0	Neg.	E. a. r. and Cr.
22c	do	do	13	do	do	99	0	Neg.	E. a. a. and Cr.
22d	do	Male	11	Cr.	do	99	0	Neg.	Neg.
22e	do	do	8	do	do	99	0	Neg.	E. a. r. and Cr.
22f	do	Female	5	do	do	99	0	Neg.	Neg.
22g	do	do	1	Neg. (clinical)		90	0	Neg.	T. r., E. a. r. and Cr.
23a	do	Male	26	do	Aug. 21	90	0	T. r.	Cr.
23b	do	Female	23	do	do	90	1	Cr.	Neg.
23c	do	do	4	do	do	90	0	Neg.	Neg.
23d	do	do	2	do	do	90	2	Neg. E. a. r. and Cr.	E. a. r.
24a	do	Male	22	do	do	90	0	T. r.	E. a. r. and Cr.
24b	do	Female	20	do		60	0	T. r.	E. a. r. and Cr.
24c	do	do	9 mo.	(Clinical)		95	0	T. r.	E. a. r. and Cr.
25a	do	Male	23	T. s. and gam.	Aug. 19	99	0	Neg.	E. a. r. and Cr.
25b	do	Female	19	T. s. and gam. E. a. r. and Cr.	do	99	0	Neg.	Neg.
25d	do	Male	21	T. s. and gam.	do	99	0	Neg.	E. a. r.
25e	do	Female	22	T. s.	do	99	0	Neg.	E. a. r. and Cr.
26c	do	do	13	do	Aug. 20	80	0	Neg.	Neg.
26d	do	do	8	Neg. (clinical)	do	80	0	E. a. r.	Cr.
26e	do	do	4	T. r.	do	80	0	E. a. r. and Cr.	Neg.
27b	do	do	31	Neg. (clinical)		50	0	Neg.	E. a. r. and Cr.
27c	do	Male	9	do	Aug. 20	99	0	Neg.	Neg.
27d	do	Female	6	do	do	99	0	Neg.	E. a. r. and Cr.
27f	do	Male	2	do		99	0	Neg.	Neg.
29a	do	do	30	do	Aug. 24	95	3	T. r.	Neg.
29b	do	Female		do		90	0		Neg.
29c	do	Male	3	do		85			E. a. r. and Cr.
29d	do	do	4 mo.	T. r. and T. s.		75	0		Neg.
30a	do	do	39	Neg. (clinical)	Aug. 20	95	0		E. a. r. and Cr.
30c	do	do	4	do	do	95	0	Neg.	E. a. r. and Cr.
31a	do	do	30	T. s. and Cr.	Aug. 19	80	0	Neg.	Cr.
51a	do	Female	30	(Clinical)	Aug. 25	90	0	Neg.	
51b	do	Male	3	do	do	80	0	Neg.	
51c	do	do	8	do	do	90	0	T. s. and Cr.	
51d	do	Female	70	do	do	75	0	Neg.	
52a	do	Male	34	do	Aug. 20	60	0	Neg.	
52b	do	Female	28	do	Aug. 21	75	0	Neg.	Neg.
52c	do	Male	10	do	do	80	0	Neg.	Neg.
52d	do	do	(?)	do	do	80	0	Neg.	Cr.
52e	do	do	(?)	do		80	8	Neg.	Neg.

Of 7 who took 95 per cent of the treatment, 1 (14.3 per cent) was positive on blood examination (tertian) and 6 were clinically positive before treatment was begun. Within 10 days after the treatment had been discontinued, this group showed 3 positives (42.9 per cent)—2 tertian and 1 estivo-autumnal. In the November 13 examination this group gave 5 positives (71.4 per cent), all estivo-autumnal.

A group of 19 took 90 per cent of the treatment, 4 of them being positive tertian and 1 estivo-autumnal, by thick smears (26.3 per cent); and 14 clinically positive before starting the treatment. Within 10 days after stopping treatment thick smears showed 4 positives (21.2 per cent), as follows: Two tertian, 1 estivo-autumnal, 1 mixed tertian and estivo-autumnal. On November 13, thick smears from the same persons showed 13 positives (68.4 per cent), as follows: No simple tertian, 12 estivo-autumnal, and 1 mixed tertian and estivo-autumnal, a decrease of 2 tertian and an increase of 11 estivo-autumnal infections from August 26 to November 13.

There were 15 who took from 80 per cent to 90 per cent of the full treatment. Five (33.3 per cent) of them showed parasites by thick smears—4 tertian and 1 estivo-autumnal—before treatment. After treatment and before time for new infections to be demonstrable, thick smears showed 4 positives (26.7 per cent), as follows: Two tertian and 2 estivo-autumnal. On November 13, there were 9 positives (60 per cent), all estivo-autumnal (thick smears).

Of the remaining 9 persons who took 50 per cent (2), 60 per cent (3), and 75 per cent (4) of the treatment, 1 (11 per cent) was diagnosed by thick smear and 8 were diagnosed clinically before treatment. Within 10 days after stopping treatment, there was 1 (11 per cent) tertian by thick smear, while specimens from these same persons taken on November 13 showed 9 positives (100 per cent), all estivo-autumnal.

Relative results, clinically and on blood examinations.—From the standpoint of keeping the people well enough to attend to their ordinary duties, this endeavor to sterilize the blood of malaria cases might be regarded as successful, for only seven of the seventy-four treated cases (9.4 per cent) experienced paroxysms after the treatment was begun. Five of the seven were those who ultimately took 90 per cent or more of the prescribed treatment, the other two taking 75 per cent and 80 per cent, respectively. In other words, 90.6 per cent of the people treated were free from frank manifestations of malaria during the eight weeks' course. However, blood specimens (thick) taken on August 25–26—in all cases less than ten days following the discontinuance of quinine—from those treated, showed that

of 67 treated cases 17 (25.4 per cent) were infected, as follows: Tertian, 10; estivo-autumnal, 5; mixed tertian and estivo-autumnal, 2. There were 9 with crescents, while none showed tertian gametocytes.

On the following November 13, thick blood smears were secured from 68 of the treated cases, with the following results: Tertian, 2; estivo-autumnal, 43; mixed tertian and estivo-autumnal, 4—a total of 49 infections (72 per cent). This was an increase of 46.6 per cent from August 26 to November 13. There were gametocytes in one simple tertian infection and crescents in 40 (85.1 per cent) of the estivo-autumnal and mixed tertian and estivo-autumnal infections. These results show a reduction of 4 tertian infections and an increase of 40 estivo-autumnal; an increase of one tertian with gametocytes and 40 estivo-autumnal with gametocytes.

HOUSE INFESTATION—ANOPHELES QUADRIMACULATUS

With the removal of brush, logs, vegetation, and flotage about the shores, and the application of Paris green at 10-day periods from May 15 to October 1, production of *Anopheles quadrimaculatus* in the pond was considerably reduced during the season of 1923. Table 2 shows the catches of *Anopheles* in houses located at various distances within one mile of the pond. No count of *Anopheles* was made during previous years, but one observer stated that there were "hundreds" per house. It will be noted that the highest average count for August, which should represent the maximum infestation in this locality, was only 98 specimens (*quadrimaculatus*) in 16 houses, or an average of 6 per house. However, with the relatively small number of vectors, and a relatively large number of gametocyte carriers distributed throughout the area from the beginning of the season, the percentage of infective *Anopheles* must have been high. As to how much of the great increase in the number of persons showing infections by the blood specimens taken November 13 over those of August 25–26 was due to infections acquired during this time, or what part recrudescences or relapses played in these results, data are not at hand to justify definite statements.

Table 2.—*Anopheline check in houses*[1]

House No.	April Day	April No. A. q.[2]	May Day	May No. A. q.	June Day	June No. A. q.	July Day	July No. A. q.	August Day	August No. A. q.	September Day	September No. A. q.
5	26	0			8	1			15	36	20	5
6	26	0	22	0					15	44	{ 4 / 20	8 / 11
7	26	0			8	0						
9									15	0		
18	26	0	22	0					15	1	4	5
46									15	0		
12	26	0							15	0	5	1
29									15	0		
15	26	0	22	0					15	0		
22									15	5	4	4
17	26	0	22	0							4	1
18	26	0										
20											4	2
21	26	0	22	0							4	6
23									25	2		
24											4	3
14											4	3
40							16	4				
2			22	4								
25											4	1
26											4	2
27											4	0
47									15	2		
48									15	0		
49									15	1		
44									15	5		
50									15	1		
X									15	1		
Y							19	18				
Z					8	[3] 1						

[1] First *Anopheles quadrimaculatus* (2 specimens) from larvae taken from the pond emerged on April 26. First *Anopheles* found in houses May 22

[2] A. q = *Anopheles quadrimaculatus*.

[3] *Anopheles crucians*

Summary

	April	May	June	July	August	September
Number of houses	0	6	3	2	16	14
Number of mosquitoes caught	0	4	[1] 2	22	98	52
Average per house	0	.66	.66	11	6.1	3.7

[1] One *A. quadrimaculatus*, 1 *A. crucians*.

CONCLUSIONS

(1) Under arrangements as satisfactory as could be made for having the eight weeks' quinine treatment for malaria taken by rural people as represented by the group herein considered, it was not practicable to get the entire treatment taken as recommended.

(2) Sufficient effect from quinine was secured to prevent frank manifestation of malaria in 90.6 per cent of the persons treated, but in 25.4 per cent of the group, parasites were found on examination of thick smears after the supervisory treatment, and before sufficient time had elapsed for new infections to show in the blood. In the group of 74 people treated, 36.5 per cent were positive on blood examination before treatment. After the treatment 25.4 per cent showed parasites, a reduction of only 11.1 per cent.

(3) In a heavily infected, poorly nourished population, with a probable high rate of hookworm disease, the quinine treatment, as

taken, failed to free a large percentage of cases of either asexual or sexual forms of the parasites, but did prevent, to a great degree, the development of paroxysms.

(4) From the last week of August to the second week of November, during which time no supervisory quinine treatment was given, the increase of infections, as shown by examination of thick blood smears, was 46.6 per cent, the great increase being due largely to the number of infections by *P. falciparum.*

(5) If the late season infections were newly acquired infections, the transmission occurred through a relatively small number of vectors with an increasingly high number of gametocyte carriers toward the end of the season.

Acknowledgements: The writer gratefully acknowledges his indebtedness to Dr. S. W. Welch, State Health Officer of Alabama; to the laboratory of the State Board of Health, and particularly to Miss Sophie Dehler, who assisted in the blood index work, including the examination of specimens; to Mr. T. D. Rivers for his very painstaking work in the distribution of quinine and the checking of its use; and to Mr. Albert R. Killebrew, General Manager of the Houston Power Co., for transportation and other services in connection with the work.

ABSENCE OF TRANSFERABLE IMMUNIZING SUBSTANCES IN THE BLOOD OF MORPHINE AND HEROIN ADDICTS

By A. G. Du Mez, Pharmacologist, and Lawrence Kolb, Surgeon, United States Public Health Service

The assumption that substances so well defined chemically as the alkaloids can give rise to the formation of antibodies is contrary to the generally accepted principles of the theory of immunity. Nevertheless, several investigators, Gioffredi (1), Hirschlaff (2), and von Marikovsky (3), have reported experiments upon which the claim is made that protection against a fatal dose of morphine can be transferred to normal animals by the injection of some of the blood serum of animals rendered tolerant to large doses of the alkaloid. Other investigators have failed to confirm these findings. Thus, Morgenroth (4), Cloetta (5), Biberfeld (6), and Pellini and Greenfield (7) report that the results of their experiments show that protection can not be transferred in this manner. A critical review of the work of the foregoing investigators, with the exception of that of Biberfeld, is given in the paper published by Pellini and Greenfield, and is therefore deemed to be unnecessary here. Suffice it to add that Biberfeld observed the effects on rabbits of a narcotic dose of morphine before and after the subcutaneous injection of the blood serum of a dog rendered tolerant to large doses of the alkaloid. Typical narcotic symptoms made their appearance in all cases, showing the lack of any protective action of the serum.

The experiments recorded below were begun about two years ago, and were undertaken as a phase of the studies in drug addiction being carried out by the United States Public Health Service. The results obtained were similar to those reported for morphine by the second group of investigators named, and are offered as confirmatory evidence of the fact that transferable immunizing substances are not present in the blood serum of morphine and heroin addicts.

EXPERIMENTAL WORK

The experiments here described are, by virtue of the manner in which they were carried out, divided into two groups. In the experiments falling in the first group, the minimal fatal doses of morphine sulphate and heroin hydrochloride, when injected subcutaneously in aqueous solution, were established, and the protective effect of the serum against these doses was then tested. In the experiments of the second group the effect of the serum was tested against an increasing dosage of the drugs, beginning with a sublethal dose and ending with a surely fatal dose, thus eliminating any factor of uncertainty which may have been introduced in determining the minimal fatal doses.

In both groups of experiments the blood serum of human beings only was used. The addict serum was obtained from blood taken from morphine and heroin addicts shortly after their entrance into a certain hospital for treatment, the blood being drawn 24 to 48 hours after the last dose of opiate had been taken and when withdrawal symptoms were in evidence. The blood was placed in the refrigerator overnight, and the serum was separated from the clot just before using. When necessary the serum was centrifuged. The serum used in the control tests was obtained from the blood of normal persons known to be nonaddicts. The blood was collected at approximately the same time as the addicts' blood and was subjected to the same treatment.

The test animal used was the white mouse. It was chosen principally because it is the animal which was used by most of the others who have worked on this problem and because its small size made it possible to carry out the greatest number of tests with the limited quantities of serum obtained. In all of the experiments the mice were selected with a view to securing healthy animals of fairly uniform weight. Food and water were withheld from them for a period of 18 hours immediately preceding weighing and the application of the tests.

The injections, whether of the alkaloidal salts in simple aqueous solution or in solution mixed with serum, were made into the subcutaneous tissues of the abdomen, the site of the puncture being pinched to prevent the escape of any of the liquid. When serum was given alone prior to the administration of the alkaloidal salts, it was injected into the subcutaneous tissues of the back.

EXPERIMENTS: GROUP I

For the determination of the minimal fatal doses of morphine sulphate and heroin hydrochloride, the drugs used by the addicts from which blood was obtained, sufficient quantities of these alkaloidal salts were dissolved in distilled water to make 1 cubic centimeter of the solution contain 10 milligrams of drug. These solutions in amounts representing increases in the size of the doses were then injected into several groups of mice and the death rate was noted. The minimal fatal dose taken was the dose which would surely produce death in a large majority of the animals tested. For morphine sulphate, this was found to be 0.40 to 0.45 milligram per gram weight of mouse; for heroin hydrochloride, 0.15 to 0.2 milligram. Only those deaths occurring within 3¼ hours in the case of morphine sulphate and in 1 hour in the case of heroin hydrochloride were recorded as being due to acute intoxication. Tables 1 and 2 show the results of these tests.

TABLE 1.—*Minimal fatal dose of morphine sulphate*

Dose of morphine sulphate per gram of body weight	Number of mice tested	Number of deaths within 3¼ hours	Per cent of deaths
Mg			
0.20	6	0	0
.25	6	1	16.7
.30	12	5	41.7
.35	12	8	66.7
.40	10	6	60.0
.45	18	16	89.0

TABLE 2.—*Minimal fatal dose of heroin hydrochloride*

Dose of heroin hydrochloride per gram of body weight	Number of mice tested	Number of deaths within 1 hour	Per cent of deaths
Mg.			
0.08	6	1	16.7
.10	6	1	16.7
.15	12	6	50.0
.20	23	19	82.6

Having established the minimal fatal dose of morphine sulphate as 0.45 milligram per gram of body weight and that of heroin hydrochloride as 0.2 milligram per gram, the tests to determine the effect of injections of addict serum on the death rate were carried out. The serum was injected alone preceding the injections of fatal doses of these drugs and simultaneously in admixture with different amounts of solutions of the drugs. The mixtures were incubated at 37° C. for a period of one hour. Controls were run in all cases, using the serum obtained from persons known to be nonaddicts. The results of these tests are presented in Tables 3 and 4 and show that in no case can

it be said that the addict serum produced an effect differing in nature from that of the control serum.

These tests show that the effect of both addict and normal serum was to lower the death rate slightly and that the extent to which it was lowered was approximately the same in both cases. One or all of several factors may have been responsible for this. In the first place, the mice in these tests received by injection a total amount of fluid in excess of that injected into the mice upon which the minimal fatal dose tests were made, thus making the dilution higher; secondly, the viscosity of the serum may have retarded absorption; and thirdly, all human serum may have the property of fixing certain amounts of these alkaloidal salts. Since these factors were operative, in the controls as well as in the tests made with addict serum, they were ignored in comparing the action of the sera tested.

TABLE 3.—*Effect of blood serum of morphine addicts on the death rate for the minimal fatal dose of morphine sulphate*

Series	Dose of morphine SO_4 per gram weight	Number of mice	Number of deaths	Per cent of deaths
	Mg.			
I	0.45	14	12	86
II	.45	10	7	70
III	.45	7	5	71
Control	.45	8	5	62

Group I: Received 0.5 c. c. of morphine addict serum subcutaneously. One hour later, 0.45 mg. of morphine SO_4 in aqueous solution (1 c. c. = 10 mgs.)
Group II: 20 c. c. morphine addict serum+20 c. c. of morphine SO_4 solution (1 c. c.=10 mgs.) were incubated for 1 hour at 37°. Of this mixture an amount equivalent to 0.45 mg. of morphine SO_4 per gm. weight of mouse was injected subcutaneously.
Group III: Same as Group II, except that 30 c. c. of addict serum were incubated with 10 c. c. of morphine SO_4 solution (1 c. c.=20 mgs.).
Control: Same as Group III, except that the serum of a nonaddict was used in place of addict serum.

TABLE 4.—*Effect of blood serum of heroin addicts on the death rate for the minimal fatal dose of heroin hydrochloride*

Series	Dose of heroin HCl per gram	Number of mice	Number of deaths	Per cent of deaths
	Mg.			
I	0.2	22	13	59
Control	.2	10	7	70
II	.2	12	9	75
Control	.2	16	10	63
III	.2	10	4	40
Control	.2	10	4	40
IV	.2	8	5	62
Control	.2	8	5	62

Group I: Received 0.5 c. c. of heroin addict serum subcutaneously. One hour later, 0.2 mg. per gm. of heroin HCl in aqueous solution (1 c. c. = 10 mgs. heroin HCl).
Group II: 25 c. c. of heroin addict serum +25 c. c. of heroin HCl solution (1 c. c. = 10 mgs.) were incubated for 1 hour at 37°. Of this mixture an amount equivalent to 0.2 mg. of heroin HCl per gm. of mouse was injected subcutaneously.
Group III: Same as Group II, except that 32 c. c. of heroin addict serum were incubated with 16 c. c. of heroin HCl solution.
Group IV: Same as Group II, except that 30 c. c. of heroin addict serum were incubated with 10 c. c. of heroin HCl solution
Controls: The controls received the same as the respective groups, except that the serum of a nonaddict was used in place of addict serum.

The lack of any appreciable protective effect of addict serum greater than that of nonaddict serum is further shown by the fact that there is practically no difference in the effect of the two kinds of sera on the length of the period of survival following the injection of minimal fatal doses of these alkaloidal salts. The results of tests of this nature carried out with heroin addict serum and heroin hydrochloride are given in Table 5. In Group I of this series of experiments the average length of the period of survival of the mice which died following the injection of heroin addict serum and a minimal fatal dose of heroin hydrochloride was 1 hour 34 minutes; for the controls, using nonaddict serum, it was 1 hour 24 minutes. In Group II the average length of the period was 1 hour 9 minutes for the mice which received addict serum and 1 hour 17 minutes for the controls.

TABLE 5.—*Effect of heroin addict serum on the length of the period of survival following a minimal fatal dose of heroin hydrochloride*

Number of mouse	Length of period of survival following an injection of heroin addict serum and a minimal fatal dose of heroin hydrochloride			
	Group I	Control I	Group II	Control II
	hrs. mins.	*hrs. min.*	*hrs. mins.*	*hrs. mins.*
1	0 35	Survived	Survived.	1 49
2	2 32	1 42	do	Survived.
3	1 23	1 48	1 26	0 47
4	Survived	0 30	1 33	Survived.
5	0 56	2 4	Survived.	1 21
6	1 53	1 19	0 48	Survived.
7	2 7	1 4	0 48	Do.
8	Survived	1 20	Survived.	Do.
9	do	Survived.	do	Do.
10	do	do	do	1 11

Group I Received 0.5 c. c. of heroin addict serum subcutaneously. One hour later, 0.2 mg. per gm. of heroin in aqueous solution (1 c. c. = 10 mgs. heroin HCl) subcutaneously.
Control I. Received the same as Group I, the addict serum being replaced by the serum of a nonaddict.
Group II: 16 c. c. of heroin addict serum + 8 c. c. of heroin HCl solution (1 c. c. = mgs. of heroin HCl) were incubated for one hour at 37°. Of this mixture, a quantity equivalent to 0.2 mg. of heroin HCl per gm. of mouse was injected subcutaneously.
Control II Received the same as Group II, the addict serum being replaced by the serum of a nonaddict.

The results of the foregoing tests are in accord with those reported for morphine by the second group of investigators named in the forepart of this paper. Taken together, it would seem that they constitute sufficient evidence upon which to base the claim that the blood of morphine and heroin addicts does not contain transferable immunizing substances. However, it may be contended that this conclusion is erroneous on the ground that it is impossible to establish accurately minimum lethal doses for these substances, owing to the wide variation in the resistance of different lots of mice, as well as of the individuals of any given lot, and because the same conditions were not always observed with respect to the concentration and amount of liquid injected. That this contention is not warranted is proved

by the results obtained in a second group of experiments carried out, the report of which follows:

EXPERIMENTS: GROUP II

In this group of experiments the necessity for establishing the minimal lethal doses of the drugs of addiction was avoided. The effect of addict serum was checked against that of the serum of healthy persons known to be nonaddicts, beginning with a sublethal dose of drug and ending with a surely fatal dose. The controls were run under exactly the same conditions as the addict serum tests and at about the same time. In all, 11 series of tests of this nature were carried out, typical results of which are presented in the tables below:

These results show that addict serum, administered as such or in different dilutions, does not affect the death rate or the period of survival of mice to which toxic doses of the drugs of addiction have been administered. any differently than does the serum of nonaddicts. Of the 36 mice which received morphine addict serum and morphine sulphate, 24 died; of the 36 controls, 24 died. Of the 52 mice which received heroin addict serum and heroin hydrochloride, 35 died; of the controls, 36 died. The average length of the period of survival of the mice which died after receiving morphine addict serum and morphine sulphate was 1 hour and 31 minutes. The average length of the period of survival of the controls which receive nonaddict serum in place of addict serum was 1 hour and 37 minutes. In the case of the mice which received heroin addict serum and heroin hydrochloride the average length of the period of survival was 1 hour and 30 minutes, and of the controls 1 hour and 28 minutes.

The results of tests in which the dosage of drug given was so small that none of the mice in either the addict serum group or the controls died, are not recorded in the tables, since they show nothing which might be used as a basis for determining differences in the effects of the two types of sera.

TABLE 6.—*Effect of the blood serum of morphine addicts on the death rate for toxic doses of morphine sulphate*

Series	Mouse		Dose of morphine sulphate		Time of injection	Time of death
	Number	Weight in grams	Mg. per gram	C. c. of mixture		
A (received morphine addict serum)	1	15.5	0.40	0.62	11.33 a. m.	Survived.
	2	16.1	.40	.64	11.34 a. m.	Do.
	3	16.0	.40	.64	11.35 a. m.	Do.
	4	17.2	.40	.69	11.36 a. m.	Do.
	1	19.6	.45	.88	11.37 a. m.	1.37 p. m.
	2	16.6	.45	.75	11.38 a. m.	1.00 p. m.
	3	16.3	.45	.73	11.39 a. m.	Survived.
	4	16.7	.45	.75	11.40 a. m.	Do.
	1	19.6	.50	.98	11.41 a. m.	12.49 p. m.
	2	19.5	.50	.98	11.42 a. m.	Survived.
	3	18.6	.50	.93	11.43 a. m.	Do.
	4	17.8	.50	.89	11.44 a. m.	1.30 p. m.
	1	18.6	.60	1.12	11.45 a. m.	1.10 p. m.
	2	18.7	.60	1.12	11.46 a. m.	1.48 p. m.
	3	15.8	.60	.95	11.47 a. m.	1.00 p. m.
	4	14.0	.60	.84	11.48 a. m.	1.35 p. m.
	1	12.9	.65	.84	11.49 a. m.	12.50 p. m.
	2	16.6	.65	1.08	11.50 a. m.	12.35 p. m.
	3	17.0	.65	1.12	11.51 a. m.	12.30 p. m.
	4	16.0	.65	1.04	11.52 a. m.	12.35 p. m.
Control (received nonaddict serum)	1	19.1	.40	.76	11.57 a. m.	Survived.
	2	14.7	.40	.59	11.58 a. m.	Do.
	3	14.8	.40	.59	11.58 a. m.	Do.
	4	14.7	.40	.59	11.59 a. m.	1.30 p. m.
	1	16.7	.45	.75	12.00 m.	1.49 p. m.
	2	16.3	.45	.73	12.01 p. m.	Survived.
	3	18.5	.45	.83	12.02 p. m.	Do.
	4	16.3	.45	.73	12.03 p. m.	1.54 p. m.
	1	16.5	.50	.83	12.04 p. m.	Survived.
	2	18.2	.50	.91	12.05 p. m.	Do.
	3	16.8	.50	.84	12.06 p. m.	1.15 p. m.
	4	16.4	.50	.82	12.07 p. m.	1.28 p. m.
	1	19.4	.60	1.16	12.08 p. m.	Survived.
	2	16.2	.60	.97	12.10 p. m.	2.05 p. m.
	3	18.2	.60	1.09	12.11 p. m.	1.53 p. m.
	4	14.6	.60	.88	12.13 p. m.	1.35 p. m.
	1	19.5	.65	1.27	12.14 p. m.	1.25 p. m.
	2	17.2	.65	1.12	12.15 p. m.	1.20 p. m.
	3	18.2	.65	1.18	12.16 p. m.	1.05 p. m.
	4	19.9	.65	1.29	12.17 p. m.	1.40 p. m.

B: 0.3 gm. of morphine SO_4 was dissolved in 15 c. c. of distilled water and mixed with 15 c. c. of the serum of a morphine addict. The mixture was incubated for 1 hour at 37° C.

The serum was obtained from the blood of a person addicted to morphine for 10 years. Up to the time of entering the hospital, he was taking hypodermatically 8 grains of morphine sulphate daily. The blood was drawn 48 hours after the last dose of morphine had been given

Control: Same as B, except that the serum used was obtained from the blood of a nonaddict.

Table 7.—*Effect of the blood serum of morphine addicts on the death rate for toxic doses of morphine sulphate*

Series	Mouse		Dose of morphine sulphate		Time of injection	Time of death
	No.	Weight in grams	Mg. per gram	C. c. of mixture		
B (received morphine addict serum)					*a. m.*	
	1	17.0	0.45	0.77	10.18	12.45 p. m.
	2	14.1	.45	.63	10.19	Survived.
	3	17.8	.45	.80	10.20	1.07 p. m.
	4	13.2	.45	.59	10.21	Survived.
	1	15.3	.50	.77	10.22	11.46 a. m.
	2	16.3	.50	.82	10.23	11.40 a. m.
	3	16.7	.50	.84	10.24	12 10 p. m.
	4	17.0	.50	.85	10.25	Survived.
	1	12.7	.60	.76	10.26	11.35 a. m.
	2	12.5	.60	.81	10.27	11.40 a. m.
	3	19.8	.60	1.24	10.29	Survived.
	4	18.4	.60	1.10	10.30	12.10 p. m.
	1	19.4	.70	1.36	10.31	12.10 p. m.
	2	18.3	.70	1.28	10.32	11.47 a. m.
	3	17.5	.70	1.23	10.33	1.05 p. m.
	4	15.9	.70	1.11	10.35	12.15 p. m.
Control (received nonaddict serum)	1	13.1	.45	.59	9.48	11 45 a. m.
	2	16.5	.45	.74	9.50	Survived.
	3	17.0	.45	.77	9.51	Do.
	4	16.2	.45	.73	9.52	12.05 p. m.
	1	18.1	.50	.91	9.53	11.15 a. m.
	2	18.5	.50	.93	9.54	Survived.
	3	18.2	.50	.91	9.55	Do.
	4	15.1	.50	.76	9.56	11.47 a. m.
	1	18.0	.60	1.08	9.57	11.37 a. m.
	2	19 9	.60	1.19	9 58	12.20 a. m.
	3	16.2	.60	.97	9.59	11.50 a. m.
	4	15.8	.60	.95	10.00	11.05 a. m.
	1	15.4	.70	1.08	10.01	10.25 a. m.
	2	12.9	.70	.90	10.02	11.50 a. m.
	3	13.7	.70	.96	10.03	10.46 a. m.
	4	16.2	.70	1.13	10.04	11.45 a. m.

A: 0.4 gm. of morphine SO_4 was dissolved in 36 c. c of distilled water and mixed with 4 c. c. of the serum of a morphine addict. The mixture was incubated for 1 hour at 37°.
The serum was obtained from the blood of a male addict who had been addicted to morphine for about nine years. The blood was drawn 24 hours after this patient had received his last dose of the drug and when pronounced symptoms of suffering were evident.
Control: The same as A, except that the serum used was obtained from the blood of a nonaddict.

TABLE 8.—*Effect of the blood serum of heroin addicts on the death rate for toxic doses of heroin hydrochloride*

Series	Mouse		Dose of heroin hydrochloride		Time of injection	Time of death
	No.	Weight in grams	Mg. per gram	C. c. of mixture		
C (received heroin addict serum).	1	20.5	0.15	0.61	11.14 a. m.	Survived.
	2	15.5	.15	.46	11.15 a. m.	Do.
	3	13.4	.15	.40	11.16 a. m.	Do.
	4	14.6	.15	.44	11.17 a. m.	Do.
	1	18.4	.20	.64	11.18 a. m.	Do.
	2	19.5	.20	.78	11.19 a. m.	12.10 p. m.
	3	16.0	.20	.64	11.20 a. m.	Survived.
	4	16.9	.20	.68	11.21 a. m.	Do.
	1	17.8	.25	.89	11.22 a. m.	11.31 a. m.
	2	17.0	.25	.85	11.23 a. m.	Survived.
	3	11.1	.25	.55	11.24 a. m.	11.10 a. m.
	4	14.0	.25	.70	11.25 a. m.	Survived.
	1	16.4	.30	.98	11.26 a. m.	11.57 a. m.
	2	20.9	.30	1.25	11 27 a. m.	12.22 p. m.
	3	9.5	.30	.57	11 28 a. m.	12.05 p. m.
	4	12.5	.30	.75	11.29 a. m.	12.25 p. m.
	1	13.0	.35	.91	11.31 a. m.	12.05 p. m.
	2	15.0	.35	1.05	11.32 a. m.	12.06 p. m.
	3	15.6	.35	1.09	11 33 a. m.	12.02 p. m.
	4	14.2	.35	.99	11.35 a. m.	12.52 p. m.
Control (received nonaddict serum).	1	16.6	.15	.50	11 42 a. m.	Survived.
	2	15.5	.15	.47	11.43 a. m.	12.08 p. m.
	3	15.1	.15	.45	11.44 a. m.	Survived.
	4	16.1	.15	.48	11 45 a. m.	Do.
	1	16.3	.20	.65	11.46 a. m.	12.48 p. m.
	2	17.0	.20	.68	11.47 a m.	Survived.
	3	20.2	.20	.81	11.48 a. m.	Do.
	4	13.2	.20	.53	11.49 a. m.	1.15 p. m.
	1	16.9	.25	.84	11.50 a. m.	12 30 p. m.
	2	17.4	.25	.87	11.51 a. m.	1.10 p. m.
	3	14.2	.25	.71	11.52 a. m.	Survived.
	4	22.8	.25	1.14	11.53 a. m.	12.37 p. m.
	1	13.9	.30	.83	11.56 a. m	12.39 p. m.
	2	13.9	.30	.83	11.57 a. m.	12.43 p. m.
	3	16.6	.30	.99	11.58 a. m.	Survived.
	4	13.1	.30	.78	11.59 a. m.	12.33 p. m.
	1	15.1	.35	1.06	12.00 m.	12.35 p. m.
	2	16.0	.35	1 12	12.01 p. m.	12.35 p. m.
	3	18 2	.35	1.27	12.02 p. m.	12.46 p. m.
	4	19.0	.35	1.33	12.03 p. m.	12.47 p. m.

C: 0.175 gm. of heroin HCl was dissolved in 30 c. c. of normal salt solution and mixed with 5 c. c. of heroin addict serum. The mixture was incubated for 1 hour at 37°.

The serum was obtained from the blood of a person who had been addicted to morphine and heroin for about 12 years. Just previous to entering the hospital, heroin was the drug used. The blood was drawn 48 hours after the last dose of opiate had been given.

Control: Same as C, except that the serum used was obtained from the blood of a nonaddict.

TABLE 9.—*Effect of the blood serum of heroin addicts on the death rate for toxic doses of heroin hydrochloride*

Series	Mouse		Dose of heroin hydrochloride		Time of injection	Time of death
	No.	Weight in grams	Mgs. per gram	C. c. of mixture		
D (received heroin addict serum).	1	15.1	0.20	0.60	11.35 a. m.	12.25 p. m.
	2	16.2	.20	.65	11.36 a. m.	12.20 p. m.
	3	22.7	.20	.91	11.37 a. m.	12.35 p. m.
	4	13.8	.20	.55	11.38 a. m.	Survived.
	1	24.0	.25	1.20	11.39 a. m.	1.15 p. m.
	2	12.7	.25	.63	11.40 a. m.	12.35 p. m.
	3	17.0	.25	.85	11.41 a. m.	Survived.
	4	14.3	.25	.72	11.42 a. m.	12.45 p. m.
	1	13.7	.275	.75	11.43 a. m.	12.36 p. m.
	2	13.3	.275	.73	11.44 a. m.	12.30 p. m.
	3	16.2	.275	.89	11.45 a. m.	Survived.
	4	21.9	.275	1.20	11.46 a. m.	12.35 p. m.
	1	21.7	.30	1.30	11.48 a. m.	12.20 p. m.
	2	16.8	.30	1.00	11.49 a. m.	12.37 p. m.
	3	20.3	.30	1.22	11.50 a. m.	12.29 p. m.
	4	14.8	.30	.69	11.51 a. m.	12.42 p. m.
Control (received nonaddict serum).	1	23.2	.20	.93	12.00 m.	Survived.
	2	21.0	.20	.84	12.01 p. m.	12.59 p. m.
	3	19.7	.20	.79	12.02 p. m.	1.45 p. m.
	4	17.7	.20	.71	12.03 p. m.	Survived.
	1	19.8	.25	.99	12.04 p. m.	1.36 p. m.
	2	13.8	.25	.69	12.05 p. m.	Survived.
	3	17.7	.25	.88	12.06 p. m.	12.58 p. m.
	4	17.3	.25	.86	12.07 p. m.	12.55 p. m.
	1	24.5	.275	1.35	12.09 p. m.	12.45 p. m.
	2	14.4	.275	.79	12.10 p. m.	1.10 p. m.
	3	10.1	.275	.56	12.11 p. m.	Survived.
	4	12.9	.275	.71	12.12 p. m.	12.52 p. m.
	1	16.3	.30	.98	12.13 p. m.	12.50 p. m.
	2	12.1	.30	.73	12.14 p. m.	12.59 p. m.
	3	19.6	.30	1.18	12.15 p. m.	1.00 p. m.
	4	12.9	.30	.77	12.16 p. m.	12.42 p. m.

D: 0.15 gm. of heroin HCl was dissolved in 15 c. c. of normal salt solution and mixed with 15 c. c. of serum. The mixture was incubated for 1 hour at 37°.

The serum was obtained from a person who had been addicted to morphine and heroin for a period of eight years. On entering the hospital this person was taking hypodermatically 24 grains of heroin HCl per day. The blood was drawn 4 days after the last dose of heroin and 48 hours after the last opiate (codeine) was given.

Control: The same as D, except that the serum was obtained from the blood of a nonaddict.

TABLE 10.—*Effect of the blood serum of heroin addicts on the death rate for toxic doses of heroin hydrochloride*

Series	Mouse		Dose of heroin hydrochloride		Time of injection	Time of death
	No.	Weight in grams	Mgs. per gram	C. c. of mixture		
E (received heroin addict serum).	1	16.5	0.225	0.74	11.35 a. m.	Survived.
	2	16.4	.225	.74	11.36 a. m.	Do.
	3	12.0	.225	.54	11.37 a. m.	3.20 p. m.
	4	14.2	.225	.64	11.38 a. m.	3.30 p. m.
	1	19.0	.25	.95	11.40 a. m.	Survived.
	2	17.7	.25	.88	11.41 a. m.	Do.
	3	16.3	.25	.81	11.42 a. m.	2.12 p. m.
	4	15.9	.25	.79	11.43 a. m.	2.45 p. m.
	1	16.5	.275	.90	11.45 a. m.	Survived.
	2	14.2	.275	.78	11.46 a. m.	2.32 p. m.
	3	15.7	.275	.86	11.47 a. m.	3.00 p. m.
	4	16.1	.275	.88	11.48 a. m.	2.33 p. m.
	1	15.5	.30	.93	11.51 a. m.	2.22 p. m.
	2	17.9	.30	1.07	11.52 a. m.	2.35 p. m.
	3	16.3	.30	.98	11.53 a. m.	2.17 p. m.
	4	17.1	.30	1.03	11.54 a. m.	1.52 p. m.
Control (received nonaddict serum).	1	16.5	.225	.74	11.25 a. m.	2.22 p. m.
	2	15.6	.225	.70	11.26 a. m.	Survived.
	3	20.6	.225	.81	11.27 a. m.	3.00 p. m.
	4	14.6	.225	.66	11.29 a. m.	Survived.
	1	14.5	.25	.72	11.30 a. m.	2.32 p. m.
	2	16.5	.25	.82	11.31 a. m.	Survived.
	3	12.6	.25	.62	11.32 a. m.	Do.
	4	17.5	.25	.87	11.34 a. m.	2.50 p. m.
	1	16.8	.275	.92	11.35 a. m.	2.55 p. m.
	2	16.8	.275	.92	11.36 a. m.	2.20 p. m.
	3	16.7	.275	.91	11.37 a. m.	1.47 p. m.
	4	15.1	.275	.83	11.38 a. m.	Survived.
	1	16.4	.30	.98	11.39 a. m.	1.48 p. m.
	2	13.8	.30	.81	11.40 a. m.	2.00 p. m.
	3	18.2	.30	1.09	11.41 a. m.	2.48 p. m.
	4	17.0	.30	1.02	11.42 a. m.	2.35 p. m.

E: 0.10 gm. of heroin HCl was dissolved in 20 c. c. of the blood serum of a heroin addict and the solution was incubated for 1 hour at 37°.

The addict from which this serum was obtained had been addicted to opiates for 20 years. For 3 years prior to his admission to the hospital he had been taking hypodermatically 20 grains of heroin HCl daily. The blood was drawn 48 hours after he had received his last dose of heroin and 24 hours after the last opiate.

Control: The same as E, except the serum used was obtained from the blood of a nonaddict.

CONCLUSIONS

Both groups of results presented above fail to show that the effect of subcutaneous injections of morphine and heroin addict blood sera into mice receiving lethal doses of the respective drugs of addiction differs from that produced by the injection of non-addict sera—a slight protective action being observed in both cases, as has been discussed. It is therefore concluded that the blood of human beings addicted to these drugs does not contain transferable immunizing substances.

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TETANUS FROM VACCINATION DRESSINGS

The United States Public Health Service issues a warning to the medical profession and to the public against the use of bunion pads as a dressing in vaccination against smallpox.

This singular use of bunion pads appears to be more common than would be supposed. Several fatal cases of tetanus following their use have recently occurred in the United States, and laboratory tests have demonstrated the presence of tetanus spores in bunion pads from the same source as those which were associated with tetanus cases.

The Public Health Service deprecates the use of any kind of a shield as a vaccination dressing. The employment of such a shield tends to prevent evaporation, to retain heat, moisture, or discharges, with a consequent softening of the vesicle, to obstruct lymphatic drainage, to produce hyperemia, and to create conditions apparently favorable for the development of bacterial invasion, especially by the tetanus organism.

The smallest single site insertion compatible with a successful take and with no immediate dressing whatever is believed to be the best method of vaccination in the majority of cases.

DEATH RATES IN A GROUP OF INSURED PERSONS

COMPARISON OF PRINCIPAL CAUSES OF DEATH, JANUARY, 1925, AND JANUARY, DECEMBER, AND YEAR, 1924

The accompanying table is taken from the Statistical Bulletin for February, 1925, published by the Metropolitan Life Insurance Co., and presents the mortality experience of the industrial insurance department of the company for January, 1925, as compared with December, 1924, and January and year, 1924. The rates for January, 1925, are based on a strength of approximately 16,000,000 insured persons in the United States and Canada.

The January death rate of 9.5 per 1,000, as compared with 10 in 1924, is stated to be the lowest January rate on record for this group of persons. For some reason, however, this favorable comparison does not hold for the large cities of the United States, the general death rate for which, as reported by the Bureau of the Census, is given as 14.4 per 1,000 for January, 1925, in comparison with 13.5 for January, 1924, and 13.2 for December, 1924.

The table shows declines from the rates for January, 1924, for all the principal diseases of childhood, the measles death rate being about one-fourth that of a year ago, and the diphtheria rate showing a decline of 23 per cent. The pneumonia rate shows a slight decline, despite the inclusion of a large number of infant lives in 1925; and fewer deaths were also recorded from cancer, cerebral hemorrhage, Bright's disease, and puerperal conditions. The outstanding feature in the comparison with January, 1924, is the reduction in the death rate from tuberculosis from 110 per 100,000 a year ago to 96.1 this year.

Influenza was more prevalent than during January, 1924; and diabetes and organic heart diseases show higher rates this year.

Death rates (annual basis) for principal causes per 1,000 lives exposed, January, 1925, and December, January, and year, 1924

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Death rate per 100,000 lives exposed [1]			
	January, 1925	December, 1924	January, 1924	Year 1924 [2]
Total, all causes	952.6	954.0	998.1	907.5
Typhoid fever	4.4	4.2	3.0	4.4
Measles	2.3	1.6	8.8	7.2
Scarlet fever	5.1	3.8	7.0	4.4
Whooping cough	5.1	5.3	5.9	7.4
Diphtheria	15.8	14.3	20.4	13.2
Influenza	25.1	19.6	16.6	16.0
Tuberculosis (all forms)	96.1	97.5	110.0	104.5
Tuberculosis of respiratory system	84.8	86.2	100.2	92.6
Cancer	70.7	71.2	74.3	70.4
Diabetes mellitus	19.1	16.5	17.6	14.9
Cerebral hemorrhage	58.5	64.4	67.7	60.2
Organic diseases of heart	143.2	142.9	130.7	123.7
Pneumonia (all forms)	125.4	105.5	126.0	88.8
Other respiratory diseases	16.8	18.4	16.1	13.9
Diarrhea and enteritis	17.0	21.1	18.3	32.2
Bright's disease (chronic nephritis)	70.3	71.1	73.3	65.5
Puerperal state	14.4	15.6	17.2	16.5
Suicides	5.7	7.6	5.6	7.2
Homicides	6.6	7.8	5.7	7.1
Other external causes (excluding suicides and homicides)	59.2	64.3	64.0	62.7
Traumatism by automobile	11.0	17.5	13.2	15.7
All other causes	192.0	201.2	200.8	187.0

[1] All figures include infants insured under one year of age.
[2] Based on provisional estimate of lives exposed to risk in 1924.

PERCENTAGE OF DISBURSEMENTS FOR PRINCIPAL CAUSES OF DEATH IN 1924

The following table, taken from the Bulletin for February, 1925, shows the percentages of the total amount paid in death claims in 1924 on account of deaths from specified diseases and conditions.

For the first time, it is stated, the amount disbursed on account of deaths from heart disease (approximately one-seventh of the total) exceeded that for any other disease. The three principal cardiovascular-renal impairments (heart disease, cerebral hemorrhage, and chronic nephritis) were responsible for 27.1 per cent of the total claims paid.

Per cent disbursed on account of deaths from specified diseases and conditions—Entire experience Metropolitan Life Insurance Co., 1924

Disease or condition	Per cent of total	
	1924	1925
Diseases of the heart	13.5	12.7
Tuberculosis (all forms)	12.3	12.8
Tuberculosis of the respiratory system	11.4	12.0
Influenza and pneumonia	9.5	11.5
Influenza	1.7	3.4
Pneumonia (all forms)	7.7	8.1
Cancer (all forms)	9.4	8.8
Chronic nephritis	7.0	7.0
Cerebral hemorrhage	6.6	6.8
Puerperal state	1.7	1.7
Typhoid fever	.7	.7
Total external causes	12.3	11.8
Suicides	2.1	2.1
Homicides	1.2	1.2
Accidents	9.0	8.4
Accidental drowning	.9	.9
Traumatism by fall	1.1	.9
Railroad accidents	.9	1.0
Automobile accidents	1.9	1.9
Other accidents	4.2	3.8
All other causes of death	26.9	26.2

Examination for Entrance into the Regular Corps of the United States Public Health Service

Examinations of candidates for entrance into the Regular Corps of the United States Public Health Service will be held at the following-named places on the dates specified:

Washington, D. C., June 1, 1925.
Chicago, Ill., June 1, 1925.
New Orleans, La., June 1, 1925.
San Francisco, Calif., June 1, 1925.

Candidates must be not less than 23 nor more than 32 years of age, and they must have been graduated in medicine at some reputable medical college, and have had one year's hospital experience or two years' professional practice. They must pass satisfactorily oral, written, and clinical tests before a board of medical officers and undergo a physical examination.

Successful candidates will be recommended for appointment by the President with the advice and consent of the Senate.

Requests for information or permission to take this examination should be addressed to the Surgeon General, United States Public Health Service, Washington, D. C.

DEATHS DURING WEEK ENDED MARCH 7, 1925

Summary of information received by telegraph from industrial insurance companies for week ended March 7, 1925, and corresponding week of 1924. (From the Weekly Health Index, March 10, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended Mar. 7, 1925	Corresponding week, 1924
Policies in force	58, 897, 864	55, 215, 882
Number of death claims	12, 497	11, 793
Death claims per 1,000 policies in force, annual rate	11. 1	11. 1

Deaths from all causes in certain large cities of the United States during the week ended March 7, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, March 10, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Mar. 7, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Mar. 7, 1925 [2]
	Total deaths	Death rate [1]		Week ended Mar. 7, 1925	Corresponding week, 1924	
Total (64 cities)	7, 643	14. 5	[3] 15. 0	889	[3] 948	
Akron	39			7	7	77
Albany [4]	40	17. 4	18. 9	4	7	89
Atlanta	77	17. 3	24. 0	5	13	
Baltimore [4]	258	16. 9	17. 2	24	33	70
Birmingham	65	16. 5	19. 0	8	12	
Boston	282	18. 8	16. 1	35	24	93
Bridgeport	50			6	5	95
Buffalo	165	15. 5	12. 9	29	19	118
Cambridge	43	19. 9	14. 4	9	3	155
Camden	38	15. 4	17. 3	8	8	131
Chicago [4]	818	14. 2	13. 5	115	107	102
Cincinnati	135	17. 2	15. 2	7	14	41
Cleveland	214	11. 9	11. 1	20	28	50
Columbus	82	15. 6	15. 4	11	8	103
Dallas	61	16. 4	17. 5	8	8	
Dayton	35	10. 6	9. 6	3	3	48
Denver	76			10	14	
Des Moines	39	13. 6	17. 6	2	6	34
Detroit	322			62	55	105
Duluth	13	6. 1	7. 2	2	2	42
Erie	27			2	8	39
Fall River [4]	38	16. 4	16. 4	8	7	115
Flint	14			3	9	49
Fort Worth	32	10. 9	8. 8	5	2	
Grand Rapids	39	13. 5	13. 4	3	7	47
Houston	53			8	3	
Indianapolis	108	15. 7	15. 6	14	14	96
Jacksonville, Fla	40	19. 9	15. 8	6	5	133
Jersey City	85	14. 1	15. 4	8	9	56
Kansas City, Kans	47	19. 8	15. 0	9	4	190
Kansas City, Mo	125	17. 7	13. 2	16	6	
Los Angeles	256			26	32	72
Louisville	107	21. 5	19. 6	9	7	79
Lowell	38	17. 0	9. 5	10	4	174
Lynn	28	13. 9	12. 6	7	6	186
Memphis	71	21. 2	24. 5	8	4	
Milwaukee	139	14. 4	10. 7	19	16	87
Minneapolis	127	15. 6	12. 0	10	10	102
Nashville [4]	57	23. 9	26. 6	7	8	
New Bedford	32	12. 3	11. 4	6	9	100
New Haven	44	12. 8	15. 1	8	5	103
New Orleans	147	18. 5	22. 7	9	11	
New York	1, 531	13. 1	14. 9	155	219	62
Bronx Borough	171	9. 9	10. 1	15	15	52
Brooklyn Borough	507	11. 8	13. 1	56	75	59
Manhattan Borough	669	15. 5	19. 0	72	112	72
Queens Borough	115	10. 4	10. 6	8	12	40
Richmond Borough	69	26. 9	22. 7	4	5	72
Newark, N. J	117	13. 5	14. 2	10	18	46
Norfolk	40	12. 3	11. 4	3	8	53
Oakland	44	9. 0	13. 3	7	11	82

Deaths from all causes in certain large cities of the United States during the week ended March 7, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, March 10, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Mar. 7, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Mar. 7, 1925 [2]
	Total deaths	Death rate [1]		Week ended Mar. 7, 1925	Corresponding week, 1924	
Oklahoma City	27	18.2	17.5	3	3	
Omaha	55	13.5	12.0	8	5	77
Paterson	26	9.6	13.7	1	5	17
Philadelphia	498	13.1	15.7	55	64	69
Pittsburgh	167	13.8	22.8	14	40	49
Portland, Oreg	78	14.4	13.7	8	6	83
Providence	65	13.8	18.8	9	13	72
Richmond	65	18.2	20.4	6	8	73
Rochester	86	13.5		12		95
St. Louis	248	15.7	14.1	18	24	
St. Paul	69	14.6	14.5	8	5	68
Salt Lake City [4]	30	12.0	10.1	1	1	16
San Antonio	58	15.3	17.4	6	13	
San Francisco	126	11.8	14.0	14	10	81
Schenectady	23	11.7	16.1	5	3	141
Seattle	62			6	4	61
Somerville	31	15.8	11.9	6	3	161
Spokane	26			3	3	65
Springfield, Mass	41	14.0	13.7	6	6	89
Syracuse	55	15.0	13.0	6	6	75
Tacoma	28	14.0	11.1	4	0	95
Toledo	84	15.2	14.3	16	5	145
Trenton	44	17.4	15.7	9	7	146
Washington, D. C	179	18.7	17.5	23	17	129
Waterbury	25			5	5	111
Wilmington, Del	34	14.5	16.1	6	7	137
Worcester	65	17.0	16.0	5	9	58
Yonkers	19	8.9	12.4	0	5	0
Youngstown	41	13.4	6.0	4	3	51

[1] Annual rate per 1,000 population

[2] Deaths under 1 year per 1,000 births—an annual rate based on death under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.

[3] Data for 63 cities.

[4] Deaths for week ended Friday, Mar. 6, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowlege of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended March 14, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	2
Chicken pox	32
Diphtheria	9
Dysentery	5
Influenza	619
Lethargic encephalitis	1
Malaria	51
Measles	34
Mumps	63
Ophthalmia neonatorum	3
Pellagra	10
Pneumonia	173
Poliomyelitis	1
Scarlet fever	36
Smallpox	142
Tuberculosis	40
Typhoid fever	7
Whooping cough	7

ARIZONA

Chicken pox	8
Influenza	4
Measles	31
Mumps	11
Scarlet fever	2
Smallpox	1
Tuberculosis	2
Whooping cough	7

ARKANSAS

Chicken pox	33
Diphtheria	3
Hookworm disease	1
Influenza	522
Malaria	32
Measles	26
Mumps	22

ARKANSAS—continued

	Cases
Ophthalmia neonatorum	1
Pellagra	3
Scarlet fever	4
Smallpox	4
Trachoma	3
Tuberculosis	11
Typhoid fever	8
Whooping cough	37

CALIFORNIA

Cerebrospinal meningitis—Pacific Grove	1
Diphtheria	130
Influenza	146
Jaundice (epidemic)—San Francisco	1
Lethargic encephalitis:	
Orange County	1
San Diego	1
Measles	60
Poliomyelitis	
Berkeley	1
Los Angeles	2
Scarlet fever	161
Smallpox	
Los Angeles	44
Oakland	10
San Diego	13
Scattering	60
Typhoid fever	7

COLORADO

(Exclusive of Denver)

Chicken pox	21
Diphtheria	5
Influenza	5
Measles	3
Mumps	23

COLORADO—continued

	Cases
Pneumonia	17
Scarlet fever	24
Trachoma	1
Tuberculosis	41
Typhoid fever	1
Whooping cough	20

CONNECTICUT

Chicken pox	55
Conjunctivitis (infectious)	4
Diphtheria	48
German measles	39
Influenza	15
Lethargic encephalitis	1
Malaria	1
Measles	143
Mumps	55
Paratyphoid fever	2
Pneumonia (all forms)	112
Scarlet fever	152
Septic sore throat	4
Tuberculosis (all forms)	41
Typhoid fever	2
Whooping cough	61

DELAWARE

Diphtheria	1
Measles	1
Mumps	4
Pneumonia	2
Scarlet fever	7
Tuberculosis	6
Whooping cough	3

GEORGIA

Cerebrospinal meningitis	1
Chicken pox	42
Conjunctivitis	2
Diphtheria	53
Dysentery (amebic)	3
Hookworm disease	4
Influenza	1,174
Malaria	31
Measles	35
Mumps	62
Pellagra	8
Pneumonia	137
Rabies	1
Scarlet fever	4
Septic sore throat	5
Smallpox	16
Tuberculosis	26
Typhoid fever	7
Whooping cough	67

ILLINOIS

Cerebrospinal meningitis—Cook County	1
Diphtheria:	
Cook County	75
Scattering	31
Influenza	90
Lethargic encephalitis—Cook County	2
Measles	962
Pneumonia	506

ILLINOIS—continued

	Cases
Scarlet fever:	
Cook County	367
Du Page County	8
Fulton County	12
Greene County	8
Jefferson County	12
Kane County	11
Peoria County	19
Sangamon County	8
Will County	18
Scattering	113
Smallpox:	
Douglas County	8
Madison County	23
Scattering	20
Tuberculosis	231
Typhoid fever	17
Whooping cough	230

INDIANA

Cerebrospinal meningitis	1
Chicken pox	73
Diphtheria	34
Influenza	244
Measles	109
Mumps	9
Pneumonia	53
Scarlet fever	181
Smallpox	105
Trachoma	1
Tuberculosis	34
Typhoid fever	3
Whooping cough	35

IOWA

Diphtheria	7
Scarlet fever	35
Smallpox	16
Typhoid fever	1

KANSAS

Chicken pox	105
Diphtheria	27
German measles	2
Influenza	101
Lethargic encephalitis	1
Measles	8
Mumps	448
Pneumonia	86
Scarlet fever	133
Smallpox	5
Trachoma	1
Tuberculosis	38
Typhoid fever	3
Whooping cough	21

LOUISIANA

Diphtheria	33
Influenza	76
Malaria	5
Pneumonia	42
Scarlet fever	19
Smallpox	29
Tuberculosis	32
Typhoid fever	9
Whooping cough	20

MAINE

	Cases
Chicken pox	64
Conjunctivitis	1
Diphtheria	7
Influenza	98
Measles	24
Mumps	192
Pneumonia	16
Poliomyelitis	1
Scarlet fever	27
Tetanus	1
Tuberculosis	22
Typhoid fever	2
Vincent's angina	3
Whooping cough	4

MARYLAND [1]

Cerebrospinal meningitis	2
Chicken pox	86
Diphtheria	34
German measles	2
Influenza	75
Lethargic encephalitis	1
Measles	36
Mumps	67
Pneumonia (all forms)	157
Scarlet fever	84
Tuberculosis	54
Typhoid fever	10
Whooping cough	130

MASSACHUSETTS

Chicken pox	215
Conjunctivitis (suppurative)	20
Diphtheria	125
German measles	282
Hookworm disease	1
Influenza	57
Lethargic encephalitis	3
Measles	597
Mumps	140
Ophthalmia neonatorum	40
Pneumonia (lobar)	166
Poliomyelitis	2
Scarlet fever	375
Septic sore throat	6
Trachoma	2
Tuberculosis (all forms)	185
Typhoid fever	8
Whooping cough	130

MICHIGAN

Diphtheria	75
Measles	207
Pneumonia	188
Scarlet fever	415
Smallpox	19
Tuberculosis	68
Typhoid fever	12
Whooping cough	75

MINNESOTA

Chicken pox	130
Diphtheria	64
Influenza	3
Lethargic encephalitis	1
Measles	61

[1] Week ended Friday.

MINNESOTA—continued

	Cases
Pneumonia	5
Scarlet fever	226
Smallpox	34
Tuberculosis	61
Typhoid fever	12
Whooping cough	21

MISSISSIPPI

Diphtheria	4
Influenza	729
Scarlet fever	4
Smallpox	11
Typhoid fever	4

MISSOURI

(Exclusive of Kansas City)

Chicken pox	54
Diphtheria	58
Influenza	69
Malaria	3
Measles	11
Mumps	82
Pneumonia	6
Scarlet fever	219
Smallpox	15
Trachoma	6
Tuberculosis	32
Typhoid fever	10
Whooping cough	13

MONTANA

Chicken pox	8
Diphtheria	9
German measles	51
Measles	81
Mumps	4
Poliomyelitis—Fairview	1
Scarlet fever	19
Smallpox	5
Tuberculosis	4
Whooping cough	4

NEBRASKA

Chicken pox	22
Diphtheria	7
Influenza	1
Measles	4
Mumps	26
Pneumonia	3
Scarlet fever	11
Septic sore throat	1
Smallpox	18
Typhoid fever	2
Whooping cough	1

NEW JERSEY

Cerebrospinal meningitis	4
Chicken pox	158
Diphtheria	85
Dysentery	7
Influenza	42
Measles	230
Pneumonia	163
Poliomyelitis	2
Scarlet fever	407
Smallpox	9
Trachoma	2
Trichinosis	3
Typhoid fever	21
Whooping cough	304

NEW MEXICO

	Cases
Chicken pox	18
Diphtheria	29
German measles	4
Influenza	5
Measles	114
Mumps	20
Pneumonia	15
Scarlet fever	10
Tuberculosis	12
Typhoid fever	1
Whooping cough	1

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	1
Diphtheria	90
Influenza	110
Lethargic encephalitis	2
Measles	410
Pneumonia	392
Poliomyelitis	2
Scarlet fever	394
Smallpox	9
Typhoid fever	11
Whooping cough	246

NORTH CAROLINA

Cerebrospinal meningitis	1
Chicken pox	95
Diphtheria	26
German measles	1
Measles	53
Scarlet fever	28
Smallpox	53
Typhoid fever	2
Whooping cough	95

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Cerebrospinal meningitis—Haskell	1
Chicken pox	17
Diphtheria	8
Influenza	258
Measles	6
Mumps	16
Pneumonia	99
Scarlet fever	5
Smallpox	15
Typhoid fever	11
Whooping cough	18

OREGON

	Cases
Cerebrospinal meningitis	2
Chicken pox	36
Diphtheria:	
Portland	11
Scattering	12
Influenza	31
Measles	6
Mumps	26
Pneumonia	[1] 10
Scarlet fever:	
Wasco County	8
Scattering	21
Septic sore throat	1
Smallpox:	
Portland	20
Scattering	8
Tuberculosis	17
Typhoid fever	2
Whooping cough	7

[1] Deaths.

SOUTH DAKOTA

Chicken pox	1
Diphtheria	3
Mumps	1
Pneumonia	2
Scarlet fever	34
Smallpox	11
Typhoid fever	1
Whooping cough	1

TEXAS

Cerebrospinal meningitis	2
Chicken pox	90
Diphtheria	40
Influenza	388
Lethargic encephalitis	1
Measles	42
Mumps	52
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pellagra	4
Pneumonia	61
Scarlet fever	28
Smallpox	62
Tetanus	7
Tuberculosis	30
Typhoid fever	4
Whooping cough	63

VERMONT

Chicken pox	31
Measles	1
Mumps	83
Scarlet fever	23
Typhoid fever	2
Whooping cough	10

WASHINGTON

Chicken pox	113
Diphtheria	43
German measles	74
Measles	13
Mumps	201
Pneumonia	2
Scarlet fever	46
Smallpox	38
Tuberculosis	31
Typhoid fever	6
Whooping cough	70

WEST VIRGINIA

Diphtheria	7
Scarlet fever	8
Smallpox	10
Typhoid fever	2

WISCONSIN

Milwaukee:	Cases
Chicken pox	47
Diphtheria	18
German measles	764
Influenza	1
Measles	426
Mumps	139
Pneumonia	6
Poliomyelitis	1
Scarlet fever	16
Smallpox	10
Tuberculosis	18
Whooping cough	43
Scattering:	
Chicken pox	138
Diphtheria	17
German measles	155
Influenza	50
Measles	215

WISCONSIN—continued

Scattering—Continued	Cases
Mumps	264
Pneumonia	36
Polioymelitis	2
Scarlet fever	170
Smallpox	27
Tuberculosis	16
Typhoid fever	3
Whooping cough	76

WYOMING

Chicken pox	5
Influenza	2
Measles	6
Mumps	5
Pneumonia	1
Scarlet fever	4
Smallpox	2
Typhoid fever	8

Report for Week Ended March 7, 1925

NORTH DAKOTA

	Cases
Chicken pox	12
Diphtheria	4
Mumps	2
Pneumonia	10

NORTH DAKOTA—continued

	Cases
Scarlet fever	53
Smallpox	11
Tuberculosis	3
Whooping cough	18

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
January, 1925										
District of Columbia	1	76	11		45	0	0	134	11	31
Hawaii	6	27	12		14		2	2		9
Iowa		91			11			265	148	1
Maine	1	51	44	0	68	0	7	120	1	23
Utah	23	47	42		44		1	55	23	1
February, 1925										
Alabama	7	60	3,338	39	196	16		82	884	47
Arizona		21			185			35	22	7
Arkansas	4	50	1,332	101	110	17	0	89	77	31
Connecticut	2	202	78		275		1	725	0	14
District of Columbia		83	10		40			148	9	6
Indiana	2	174	508				1	892		20
Massachusetts	9	497	261		2,204	1	4	1,462		33
Michigan		299	26		692		8	1,366	62	31

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended February 28, 1925:

Los Angeles, Calif.

Week ended Feb. 28, 1925:	
Number of rats examined	3, 073
Number of rats found to be plague infected	17
Number of squirrels examined	705
Number of squirrels found to be plague infected	0
Totals to Feb. 28, 1925:	
Number of rats examined	56, 096
Number of rats found to be plague infected	114
Number of squirrels examined	3, 009
Number of squirrels found to be plague infected	2

Oakland, Calif.

Week ended Feb. 28, 1925:	
Number of rats examined	2, 042
Number of rats found to be plague infected	1
Totals to Feb. 28, 1925:	
Number of rats examined	14, 366
Number of rats found to be plague infected	20

New Orleans, La.

Week ended Feb. 28, 1925:	
Number of vessels inspected	378
Number of inspections made	886
Number of vessels fumigated with cyanide gas	33
Number of rodents examined for plague	3, 919
Number of rodents found to be plague infected	0
Totals to Feb. 28, 1925:	
Number of rodents examined for plague	46, 410
Number of rodents found to be plague infected	12

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended February 28, 1925, 35 States reported 1,566 cases of diphtheria. For the week ended March 1, 1924, the same States reported 1,996 cases of this disease. One hundred and one cities, situated in all parts of the country, and having an aggregate population of about 28,600,000, reported 925 cases of diphtheria for the week ended February 28, 1925. Last year for the corresponding week they reported 1,092 cases. The estimated expectancy for these cities was 1,038 cases of diphtheria. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Twenty-eight States reported 3,318 cases of measles for the week ended February 28, 1925, and 18,616 cases of this disease for the week ended March 1, 1924. One hundred and one cities reported 1,953 cases of measles for the week this year, and 6,934 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: Thirty-five States—this year, 4,723 cases; last year, 4,287 cases; 101 cities—this year, 2,227 cases; last year, 1,821 cases; estimated expectancy, 1,038 cases.

Smallpox.—For the week ended February 28, 1925, 34 States reported 1,100 cases of smallpox. Last year for the corresponding week they reported 1,296 cases. One hundred and one cities reported smallpox for the week as follows: 1925, 364 cases; 1924, 514 cases; estimated expectancy, 103 cases. These cities reported 12 deaths from smallpox for the week this year, of which 5 occurred in Minneapolis, Minn., and 3 in Camden, N. J.

Typhoid fever.—Two hundred and twenty-six cases of typhoid fever were reported for the week ended February 28, 1925, by 33 States. For the corresponding week of 1924 the same States reported 199 cases. One hundred and one cities reported 75 cases of typhoid fever for the week this year and 50 cases for the week last year. The estimated expectancy for these cities was 41 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 101 cities as follows: 1925, 1,258 deaths; 1924, 1,247 deaths.

City reports for week ended February 28, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	1	2	2	0	0	0	16	2
New Hampshire:									
Concord	22,408	0	1	1	0	0	0	0	0
Vermont:									
Barre	[1] 10,008	5	0	1	0	0	1	15	2
Burlington	23,613	0	0	0	0	0	4	16	0
Massachusetts:									
Boston	770,400	29	63	47	35	8	143	7	53
Fall River	120,912	3	5	1	0	0	1	1	5
Springfield	144,227	6	4	1	4	4	55	3	0
Worcester	191,927	21	3	3	2	0	9	0	2
Rhode Island:									
Pawtucket	68,799	0	1	1	0	0	0	0	2
Providence	242,378	0	13	10	2	0	1	0	14
Connecticut:									
Bridgeport	[1] 143,555	1	9	4	2	2	3	0	5
Hartford	[1] 138,036	-------	9	-------	-------	-------	-------	-------	-------
New Haven	172,967	14	3	0	3	1	7	0	6

[1] Population Jan. 1, 1920.

City reports for week ended February 28, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	23	20	4	--------	2	73	13	22
New York	5,927,625	232	220	211	96	22	56	26	195
Rochester	317,867	9	9	0	0	0	29	47	4
Syracuse	184,511	6	7	3	0	0	2	16	12
New Jersey:									
Camden	124,157	8	4	8	--------	2	18	1	5
Newark	438,699	30	19	10	17	0	37	9	19
Trenton	127,390	1	6	1	2	1	15	0	3
Pennsylvania:									
Philadelphia	1,922,788	65	77	101	--------	9	175	27	58
Pittsburgh	613,442	77	23	13	--------	3	268	16	46
Reading	110,917	11	3	0	0	0	4	3	2
Scranton	140,636	1	4	3	--------	1	0	0	9
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	29	10	7	--------	2	0	10	0
Cleveland	888,519	102	30	21	23	2	4	4	27
Columbus	261,082	14	4	4	--------	3	1	7	9
Toledo	268,338	16	6	4	0	0	25	1	13
Indiana:									
Fort Wayne	93,573	8	3	4	0	0	2	0	6
Indianapolis	342,718	29	11	6	--------	6	4	3	22
South Bend	76,709	3	1	5	0	0	7	0	3
Terre Haute	68,939	0	1	2	--------	1	0	0	10
Illinois:									
Chicago	2,886,121	110	119	54	17	10	418	28	96
Cicero	55,968	8	1	1	0	0	8	4	1
Peoria	79,675	7	2	0	0	0	0	5	3
Springfield	61,833	4	2	1	2	0	1	0	1
Michigan:									
Detroit	995,668	40	59	37	5	6	12	15	42
Flint	117,968	4	6	2	0	0	8	2	6
Grand Rapids	145,947	9	3	0	3	2	13	0	6
Wisconsin:									
Madison	42,519	8	1	0	0	--------	3	161	--------
Milwaukee	484,595	39	15	15	1	1	354	93	0
Racine	64,393	1	2	2	0	0	18	6	1
Superior	[1] 39,671	2	1	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	1	2	0	0	0	2	0	5
Minneapolis	409,125	75	16	24	0	0	0	6	10
St. Paul	241,891	31	13	36	0	0	24	48	7
Iowa:									
Davenport	61,262	0	1	4	0	--------	4	1	--------
Des Moines	140,923	0	3	4	0	--------	0	0	--------
Sioux City	79,662	7	2	0	0	--------	2	44	--------
Waterloo	39,667	4	0	1	0	--------	0	--------	--------
Missouri:									
Kansas City	351,819	18	9	11	16	16	2	32	31
St. Joseph	78,232	4	2	1	0	0	1	2	3
St. Louis	803,853	27	47	54	1	1	2	3	--------
North Dakota:									
Fargo	24,841	11	0	0	0	0	0	23	2
Grand Forks	14,547	0	0	0	0	--------	0	0	--------
South Dakota:									
Aberdeen	15,829	4	--------	0	0	--------	0	0	--------
Sioux Falls	29,206	0	1	3	0	0	0	0	0
Nebraska:									
Lincoln	58,761	10	1	1	0	0	0	1	0
Omaha	204,382	8	4	7	0	0	1	0	9
Kansas:									
Topeka	52,555	9	2	1	0	0	1	172	4
Wichita	79,261	--------	2	--------	--------	--------	--------	--------	--------

[1] Population Jan. 1, 1920.

City reports for week ended February 28, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	0	2	1	0	0	3	0	0
Maryland:									
Baltimore	773,580	83	26	28	28	4	5	15	50
Cumberland	32,361	--------	0	1	1	0	0	--------	4
Frederick	11,301	--------	0	0	0	0	0	--------	1
District of Columbia:									
Washington	[1] 437,571	48	11	15	1	1	11	--------	19
Virginia:									
Lynchburg	30,277	2	1	0	0	0	0	23	2
Norfolk	159,089	19	2	0	0	0	0	67	6
Richmond	181,044	6	3	1	--------	6	3	2	14
Roanoke	55,502	3	1	1	1	0	0	0	1
West Virginia:									
Charleston	45,597	3	1	1	0	0	12	0	1
Huntington	57,918	0	1	0	0	--------	0	0	--------
Wheeling	[1] 56,208	8	1	0	0	0	1	3	2
North Carolina:									
Raleigh	29,171	10	0	1	0	0	0	0	1
Wilmington	35,719	4	0	0	0	1	0	3	3
Winston-Salem	56,230	10	1	1	0	1	3	1	7
South Carolina:									
Charleston	71,245	0	1	0	0	2	0	0	5
Columbia	39,688	1	1	0	0	1	1	2	2
Greenville	25,789	0	0	0	0	2	0	0	1
Georgia:									
Atlanta	222,963	0	2	5	11	2	0	1	18
Brunswick	15,937	--------	0	0	6	0	1	--------	0
Savannah	89,448	--------	0	--------	--------	--------	--------	--------	--------
Florida:									
St. Petersburg	24,403	0	0	0	0	0	0	0	7
Tampa	56,050	2	3	1	4	0	0	4	3
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	1	0	0	0	2	0	3
Lexington	43,673	1	1	0	0	0	0	0	4
Louisville	257,671	3	5	1	3	1	0	1	16
Tennessee:									
Memphis	170,067	--------	5	4	--------	6	1	--------	8
Nashville	121,128	1	1	0	--------	3	5	0	3
Alabama:									
Birmingham	195,901	9	2	2	16	8	0	3	16
Mobile	63,858	0	1	0	12	4	0	1	5
Montgomery	45,383	2	1	2	4	0	0	19	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	6	0	1	0	--------	2	5	--------
Little Rock	70,916	1	1	2	5	3	6	0	3
Louisiana:									
New Orleans	404,575	0	12	16	27	20	1	0	23
Shreveport	54,590	0	--------	0	0	0	1	0	0
Oklahoma:									
Oklahoma	101,150	4	1	5	14	0	0	2	3
Tulsa	102,018	--------	1	1	0	--------	0	--------	--------
Texas:									
Dallas	177,274	13	5	12	67	1	1	0	7
Galveston	46,877	6	0	1	0	0	0	1	00
Houston	154,970	6	2	2	0	0	0	3	1
San Antonio	184,727	0	3	1	0	5	0	1	8
MOUNTAIN									
Montana:									
Billings	16,927	6	0	0	0	0	0	7	1
Great Falls	27,787	2	1	0	0	0	60	2	1
Helena	[1] 12,037	0	0	0	0	0	0	0	0
Missoula	[1] 12,668	0	1	2	0	0	30	0	0

[1] Population Jan. 1, 1920.

City reports for week ended February 28, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MOUNTAIN—continued									
Idaho:									
Boise	22,806	4	1	0	0	0	0	0	0
Colorado:									
Denver	272,031	15	9	12		2	3	90	19
Pueblo	43,519	12	2	0	0	0	0	13	4
New Mexico.									
Albuquerque	16,648	3	1	1	3	0	1	3	0
Arizona:									
Phoenix	33,899	2		2		3	0	0	2
Utah:									
Salt Lake City	126,241	28	2	2	0	0	3	44	3
Nevada:									
Reno	12,429	0	0	0	0	0	0	1	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	59	6	16	0		6	62	
Spokane	104,573	13	3	20	0		0	0	
Tacoma	101,731	1	1	6	0	0	0	0	3
Oregon:									
Portland	273,621	21	5	16	1	0	1	6	11
California									
Los Angeles	666,853	97	32	29	47	3	12	33	27
Sacramento	69,950	1	1	2		3	0	1	5
San Francisco	539,038	57	26	16	10	1	3	22	5

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	1	0	0	0	0	1	0	1	0	4	33
New Hampshire.											
Concord	0	8	0	0	0	0	0	0	0	0	6
Vermont:											
Barre	0	2	0	0	0	1	0	0	0	0	4
Burlington	1	3	0	0	0	2	0	0	0	1	13
Massachusetts:											
Boston	55	104	0	0	0	16	2	1	1	23	288
Fall River	4	2	0	0	0	4	0	0	0	8	40
Springfield	7	26	0	0	0	2	1	0	0	4	34
Worcester	9	18	0	0	0	0	0	0	0	12	42
Rhode Island.											
Pawtucket	1	0	0	0	0	0	0	0	0	0	23
Providence	9	9	0	0	0	1	0	1	1	0	72
Connecticut:											
Bridgeport	6	15	0	0	0	3	0	1	0	0	37
Hartford	5		0				0				
New Haven	6	26	0	0	0	3	0	1	0	4	54
MIDDLE ATLANTIC											
New York											
Buffalo	20	27	0	1	0	11	1	1	0	32	188
New York	176	343	1	0	0	[2] 112	7	5	2	100	1,473
Rochester	12	60	0	0	0	4	1	3	0	4	64
Syracuse	16	4	0	0	0	1	0	2	1	4	51
New Jersey:											
Camden	3	19	0	2	3	1	0	1	0	2	48
Newark	23	42	0	0	0	10	0	0	0	64	99
Trenton	3	4	0	0	0	2	1	0	0	1	37

[1] Population Jan. 1, 1920.
[2] Pulmonary tuberculosis only.

City reports for week ended February 28, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
MIDDLE ATLANTIC—continued											
Pennsylvania:											
Philadelphia	62	225	0	3	1	45	3	3	3	75	532
Pittsburgh	20	79	0	0	0	5	0	1	0	5	174
Reading	2	12	0	0	0	1	0	0	0	3	25
Scranton	4	1	0	0	0	1	0	1	0	5	-------
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	10	11	1	0	0	8	0	0	0	3	111
Cleveland	33	26	1	0	0	16	1	0	0	27	198
Columbus	8	22	1	5	0	11	0	0	0	15	80
Toledo	17	9	4	0	0	9	0	0	1	25	87
Indiana:											
Fort Wayne	3	4	1	1	0	0	0	0	0	4	26
Indianapolis	11	2	3	15	0	11	1	2	0	4	110
South Bend	3	15	1	0	0	1	0	0	0	0	15
Terre Haute	2	5	1	6	0	1	0	0	0	0	32
Illinois:											
Chicago	93	287	3	2	0	48	3	4	1	112	703
Cicero	1	9	0	0	0	1	0	0	0	3	6
Peoria	3	7	0	0	0	1	0	0	0	0	21
Springfield	1	4	0	0	0	2	0	1	1	0	18
Michigan:											
Detroit	85	122	4	2	1	29	2	2	1	35	289
Flint	7	0	1	0	0	3	1	0	0	0	27
Grand Rapids	8	40	1	2	0	0	1	0	0	2	34
Wisconsin:											
Madison	3	4	1	0	-------	-------	0	0	-------	1	-------
Milwaukee	37	16	1	5	0	0	0	0	0	20	102
Racine	4	1	0	0	0	0	0	0	0	4	12
Superior	2	18	3	0	0	0	0	0	0	0	7
WEST NORTH CENTRAL											
Minnesota:											
Duluth	3	19	1	0	0	0	0	1	0	4	19
Minneapolis	36	77	8	16	5	0	1	3	0	3	104
St. Paul	27	27	7	2	0	3	0	2	0	7	60
Iowa:											
Davenport	3	2	2	1	-------	-------	0	0	-------	3	-------
Des Moines	9	4	2	4	-------	-------	0	0	-------	0	-------
Sioux City	2	0	1	0	-------	-------	0	0	-------	0	-------
Waterloo	3	0	0	3	-------	-------	0	0	-------	4	-------
Missouri:											
Kansas City	12	127	2	0	0	9	1	0	0	4	131
St. Joseph	2	0	0	0	0	1	0	0	0	5	29
St. Louis	27	93	2	9	0	13	1	2	0	5	232
North Dakota:											
Fargo	2	9	0	0	0	0	0	0	0	0	14
Grand Forks	0	0	1	0	-------	-------	0	0	-------	0	-------
South Dakota:											
Aberdeen	-------	0	-------	0	-------	-------	-------	0	-------	0	-------
Sioux Falls	4	0	1	0	0	0	0	0	0	0	4
Nebraska:											
Lincoln	3	1	0	2	0	0	0	0	0	5	10
Omaha	5	1	2	28	0	1	0	0	0	5	60
Kansas:											
Topeka	2	1	1	0	0	1	0	0	0	1	14
Wichita	3	-------	3	-------	-------	-------	0	-------	-------	-------	-------
SOUTH ATLANTIC											
Delaware:											
Wilmington	2	0	0	0	0	1	0	0	0	3	-------
Maryland:											
Baltimore	38	48	0	0	0	18	1	2	1	73	246
Cumberland	1	1	0	0	0	0	0	0	0	-------	13
Frederick	2	0	0	0	0	0	0	0	0	-------	5

City reports for week ended February 28, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
SOUTH ATLANTIC—continued											
District of Col.:											
Washington	22	38	1	1	1	9	1	0	0	20	157
Virginia:											
Lynchburg	1	0	0	0	0	0	0	0	0	0	12
Norfolk	1	1	0	0	0	1	0	0	0	8	
Richmond	3	4	1	0	0	6	0	1	0	1	63
Roanoke	1	1	0	0	0	1	0	2	0	0	24
West Virginia:											
Charleston	1	0	1	0	0	0	0	0	1	0	16
Huntington	1	0	0	0			0	0		0	
Wheeling	1	1	0	0	0	1	0	2	0	0	22
North Carolina:											
Raleigh	0	1	0	0	0	3	0	0	0	0	9
Wilmington	0	0	0	5	0	1	0	0	0	1	11
Winston-Salem	1	1	1	5	0	0	0	0	0	5	29
South Carolina:											
Charleston	0	0	1	0	0	2	0	2	0	0	29
Columbia	0	0	0	0	0	4	0	0	0	4	16
Greenville	0	0	0	9	0	0	0	0	0	0	13
Georgia:											
Atlanta	4	1	3	1	0	4	0	0	0	9	87
Brunswick	1	0	0	0	0	1	0	0	0		1
Savannah	1		0				1				
Florida:											
St. Petersburg	2	0	0	0	0	0	0	0	0	0	17
Tampa	0	1	0	0	0	1	1	1	0	1	34
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	2	0	0	0	1	0	1	0	0	13
Lexington	1	1	0	0	0	2	0	1	0	1	18
Louisville	4	12	1	0	0	6	1	0	0	10	98
Tennessee:											
Memphis	3	2	1	7	0	5	1	2	0		68
Nashville	2	9	1	4	0	4	0	0	0	0	44
Alabama:											
Birmingham	1	7	1	90	0	6	1	2	1	0	88
Mobile	0	0	1	0	0	2	1	1	0	0	26
Montgomery	0	0	0	1	0	0	0	0	0	0	24
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	2	0	1			0	0		0	
Little Rock	1	2	0	0	0	4	0	0	0	0	
Louisiana:											
New Orleans	4	19	3	2	0	22	2	7	0	0	176
Shreveport		0		1	0	1		1	0	0	20
Oklahoma:											
Oklahoma	2	1	4	0	0	2	0	0	0	2	21
Tulsa	1	2	2	0			0	0			
Texas:											
Dallas	1	5	5	0	0	2	0	1	0	1	49
Galveston	0	0	1	8	0	2	0	0	0	0	8
Houston	1	2	1	13	0	2	0	0	0	1	50
San Antonio	1	1	0	0	0	5	0	0	0	0	60
MOUNTAIN											
Montana:											
Billings	1	9	0	0	0	1	0	0	0	14	10
Great Falls	1	2	1	4	0	1	0	3	0	0	8
Helena	0	0	0	0	0	3	0	0	0	0	4
Missoula	0	0	0	0	0	0	0	0	0	0	3
Idaho:											
Boise	0	0	1	1	0	0	0	0	0	0	4
Colorado:											
Denver	12	15	3	0	0	9	0	1	0	1	85
Pueblo	2	3	1	0	0	1	0	4	0	0	10

City reports for week ended February 28, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
MOUNTAIN—con.											
New Mexico:											
Albuquerque	2	0	0	0	0	2	0	0	0	1	8
Arizona:											
Phoenix	------	2	------	0	0	17	------	0	0	0	38
Utah:											
Salt Lake City	3	2	2	0	0	2	0	0	0	11	33
Nevada:											
Reno	0	2	0	1	0	0	1	0	0	0	3
PACIFIC											
Washington:											
Seattle	10	7	2	31	------	------	0	0	------	40	------
Spokane	4	4	8	4	------	------	0	0	------	11	------
Tacoma	2	2	3	1	0	1	0	1	0	1	27
Oregon:											
Portland	6	5	6	18	0	7	0	1	0	10	------
California:											
Los Angeles	15	45	2	57	0	34	2	2	0	55	265
Sacramento	1	1	0	6	0	1	0	0	0	2	26
San Francisco	17	18	4	9	1	11	1	0	0	22	132

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	0	0	2	1	0	0	1	0	0
Worcester	0	0	1	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York.									
New York	1	2	10	5	0	0	1	1	1
Rochester	0	0	0	1	0	0	0	0	0
Syracuse	0	0	1	0	0	0	0	0	0
Pennsylvania:									
Pittsburgh	1	1	0	1	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cleveland	1	0	1	0	0	0	0	0	0
Illinois:									
Chicago	2	0	2	1	0	0	0	0	0
Wisconsin:									
Racine	0	0	0	0	0	0	0	1	0
WEST NORTH CENTRAL									
Missouri:									
St. Louis	0	1	0	0	0	0	0	0	0
Nebraska:									
Omaha	0	0	1	1	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	1	0	0	0	0	0	0	1	1
Virginia:									
Norfolk	1	0	0	0	0	0	0	0	0
Roanoke	0	0	0	1	0	0	0	0	0
North Carolina:									
Wilmington	0	0	0	0	0	1	0	0	0

City reports for week ended February 28, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	0	0	0	0	1	1	0	0	0
Shreveport	0	0	0	0	0	1	0	0	0
Oklahoma:									
Oklahoma	0	0	0	0	0	1	0	0	0
Texas:									
San Antonio	0	0	0	0	0	1	0	0	0
PACIFIC									
California:									
San Francisco	0	0	1	1	0	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended February 28, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, December 21, 1924, to February 28, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28
Total	150	163	169	[2] 172	[2] 163	[3] 166	[2] 175	[2] 168	[4] 150	[5] 169
New England	189	258	256	179	171	199	191	246	241	[6] 189
Middle Atlantic	119	140	181	188	175	155	171	165	163	178
East North Central	134	151	132	141	130	[3] 135	145	132	123	119
West North Central	168	176	143	255	190	251	255	259	209	[7] 295
South Atlantic	134	146	173	[2] 106	[2] 138	128	[2] 153	[2] 183	[4] 160	[4] 118
East South Central	51	91	120	91	80	97	63	69	80	51
West South Central	116	148	144	195	162	148	176	162	125	162
Mountain	209	191	239	153	239	134	191	95	162	153
Pacific	226	281	194	206	223	293	270	180	165	258

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Racine, Wis., not included.
[4] Savannah, Ga., not included.
[5] Hartford, Conn.; Wichita, Kans., and Savannah, Ga., not included.
[6] Hartford, Conn., not included.
[7] Wichita, Kans., not included.

Summary of weekly reports from cities, December 21, 1924, to February 28, 1925—Annual rates per 100,000 population—Continued

MEASLES CASE RATES

	Week ended—									
	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28
Total	105	158	215	[2] 141	[2] 213	[3] 214	[2] 254	[2] 297	[4] 384	[5] 358
New England	278	380	395	440	497	484	576	661	720	[6] 585
Middle Atlantic	235	121	169	157	187	205	205	287	373	343
East North Central	138	294	417	127	379	[3] 373	453	515	688	632
West North Central	10	10	19	12	27	21	17	31	27	[7] 75
South Atlantic	35	53	83	[2] 43	[2] 38	37	[2] 49	[2] 98	[4] 114	[4] 84
East South Central	0	17	29	46	74	91	51	74	51	41
West South Central	14	9	5	23	14	14	37	51	14	56
Mountain	19	115	134	267	248	286	782	153	620	916
Pacific	70	116	194	160	55	17	61	29	64	61

SCARLET FEVER CASE RATES

Total	244	300	369	[2] 355	[2] 370	[3] 364	[2] 412	[2] 400	[4] 391	[5] 408
New England	512	609	661	561	596	534	614	564	606	[6] 558
Middle Atlantic	225	286	324	294	326	322	373	407	376	412
East North Central	230	243	383	375	369	[3] 379	426	397	432	434
West North Central	468	527	757	755	804	779	871	728	742	[7] 758
South Atlantic	132	203	160	[2] 243	[2] 189	185	[2] 255	[2] 277	[4] 166	[4] 206
East South Central	126	172	229	183	183	217	97	212	223	183
West South Central	65	83	148	116	195	204	162	121	125	144
Mountain	191	162	382	534	305	258	334	382	248	315
Pacific	133	247	189	183	220	226	258	177	186	223

SMALLPOX CASE RATES

Total	41	48	57	[2] 58	[2] 70	[3] 67	[2] 76	[2] 79	[4] 66	[5] 66
New England	0	0	0	0	0	0	0	0	0	[6] 0
Middle Atlantic	2	3	3	10	6	9	2	4	2	3
East North Central	20	27	40	39	48	[3] 35	39	35	56	28
West North Central	205	129	220	193	180	195	145	193	126	[7] 124
South Atlantic	28	39	30	[2] 64	[2] 38	45	[2] 62	[2] 98	[4] 69	[4] 44
East South Central	183	372	305	217	675	652	823	675	532	583
West South Central	19	32	65	32	32	60	125	139	83	116
Mountain	48	48	29	57	95	48	29	162	86	57
Pacific	122	191	148	212	209	177	267	220	215	313

TYPHOID FEVER CASE RATES

Total	35	37	36	[2] 21	[2] 17	[3] 18	[2] 13	[2] 13	[4] 11	[5] 14
New England	17	25	15	25	20	7	30	20	0	[6] 13
Middle Atlantic	57	58	49	21	20	19	13	6	10	8
East North Central	24	28	23	23	11	[3] 10	8	6	6	7
West North Central	19	4	6	10	6	[3] 12	0	10	4	[7] 17
South Atlantic	37	41	55	[2] 21	[2] 11	37	[2] 17	[2] 34	[4] 8	[4] 21
East South Central	34	40	51	17	29	23	11	40	34	34
West South Central	28	37	70	70	42	60	23	46	42	42
Mountain	0	0	10	0	48	19	29	19	38	76
Pacific	15	17	26	6	15	3	17	12	23	9

[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Racine, Wis., not included.
[4] Savannah, Ga., not included.
[5] Hartford, Conn.; Wichita, Kans., and Savannah, Ga., not included.
[6] Hartford, Conn., not included.
[7] Wichita, Kans., not included.

Summary of weekly reports from cities, December 21, 1924, to February 28, 1925—Annual rates per 100,000 population—Continued

INFLUENZA DEATH RATES

	Week ended—									
	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28
Total	15	19	21	[2] 22	[2] 22	[3] 23	[2] 30	[2] 28	[4] 30	[5] 34
New England	15	3	17	27	10	27	47	27	17	[6] 40
Middle Atlantic	14	21	20	18	20	16	24	22	21	20
East North Central	16	10	16	15	18	[3] 12	13	17	18	24
West North Central	7	9	13	2	20	15	20	11	22	[7] 39
South Atlantic	14	28	35	[2] 47	[2] 23	39	[2] 49	[2] 55	[4] 55	[4] 42
East South Central	51	63	46	46	63	74	69	63	74	126
West South Central	15	51	41	87	92	82	97	122	153	148
Mountain	10	38	19	29	10	38	57	57	57	19
Pacific	12	12	20	12	12	20	41	4	12	29

PNEUMONIA DEATH RATES

	Dec. 27	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28
Total	157	203	192	[2] 215	[2] 211	[3] 206	[2] 225	[2] 222	[4] 216	[5] 201
New England	114	174	122	157	216	241	211	239	241	[6] 242
Middle Atlantic	178	226	228	260	234	230	253	231	216	185
East North Central	126	165	152	152	142	[3] 145	164	168	184	171
West North Central	92	101	90	107	120	118	134	131	131	[7] 161
South Atlantic	205	250	246	[2] 294	[2] 275	252	[2] 315	[2] 270	[4] 253	[4] 309
East South Central	206	303	292	189	320	303	326	320	320	292
West South Central	229	341	260	449	362	229	352	464	408	260
Mountain	219	229	229	248	324	315	191	277	219	267
Pacific	147	188	184	163	208	217	196	192	213	163

[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Racine, Wis., not included.
[4] Savannah, Ga., not included.
[5] Hartford, Conn.; Wichita, Kans., and Savannah, Ga., not included.
[6] Hartford, Conn., not included.
[7] Wichita, Kans., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

CANADA

Communicable diseases—Ontario—February 1–28, 1925 (comparative).—During the period February 1 to 28, 1925, communicable diseases were notified in the Province of Ontario, Canada, as follows:

Disease	1925		1924	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis	8	4	2	1
Chancroid	15		4	
Chicken pox	539		600	
Diphtheria	285	17	294	34
German measles	13	1	29	
Goiter	44	3	6	4
Gonorrhea	216		108	
Influenza		24	39	15
Lethargic encephalitis	11	9	1	
Measles	1,576	3	1,914	4
Mumps	1,112		787	1
Pneumonia		241		180
Poliomyelitis	4	3	2	
Scarlet fever	621	10	940	10
Smallpox	14	1	125	14
Syphilis	163		101	
Tuberculosis	158	88	145	101
Typhoid fever	40	3	23	3
Whooping cough	427	8	202	5

Smallpox.—Smallpox was reported in 10 localities, the largest number of cases, viz, 3, with 1 death, being reported at Stratford.

CANARY ISLANDS

Plague—Las Palmas—February 4, 1925.—Under date of February 4, 1925, a new case of bubonic plague was reported at Las Palmas, Canary Islands.

CUBA

Communicable diseases—February 1–28, 1925.—During the period February 1 to 28, 1925, communicable diseases were reported at Habana, Cuba, as follows:

Disease	Feb. 1-28, 1925		Remaining under treatment Feb. 28, 1925
	New cases	Deaths	
Chicken pox	5		2
Diphtheria	19		6
Leprosy	[1] 1		10
Malaria	60	1	[2] 36
Measles	35	1	16
Scarlet fever	7		5
Typhoid fever	20	6	[2] 27

[1] Reported for week ended Feb. 28, 1925.
[2] A number of cases of malaria and typhoid fever were from the interior of the island; one case of typhoid fever and one case of malaria were from abroad.

ECUADOR

Communicable diseases—Mortality—Quito—January, 1925.—During the month of January, 1925, communicable diseases were reported at Quito, Ecuador, as follows: Dysentery, 156 cases, of which 44 were from localities outside the city, with 7 deaths; tuberculosis, pulmonary, 15 cases with 15 deaths; other forms of tuberculosis, 2 deaths; typhoid fever, 8 cases with 1 death; whooping cough, 32 cases with 1 death. The total number of deaths from all causes was 153, of which 54 deaths were of children under 1 year of age. Population, 100,525.

Plague—February 1-15, 1925.—During the period February 1 to 15, 1925, plague was reported in Ecuador as follows: Guayaquil—14 cases with 5 deaths; Yaguachi—1 case with 1 death.

Plague-Infected rats—Guayaquil.—During the same period, 76 rats were found plague infected at Guayaquil out of 12,165 rats taken.

FRANCE

Smallpox—Saint Malo—February, 1925.—During the week ended February 8, 1925, seven cases of virulent smallpox, with one death, were reported at the port of Saint Malo, department of Ille et Vilaine, France. The disease was reported to have been brought by the steamship *Ruyth*, which arrived during the latter part of January from Sfax, Tunis.

HUNGARY

Protective measures in effect in frontier districts.—According to information received under date of February 12, 1925, the provisions of an agreement between Austria and Hungary for the protection of frontier districts against the importation of epidemic diseases were put into effect January 1, 1925. These provisions require authorities in the frontier districts of the two countries to report mutually all cases of epidemic disease occurring in their respective districts.

MADAGASCAR

Plague—December 16-31, 1924—January 1-15, 1925.—Plague has been reported in the island of Madagascar as follows: December 16 to 31, 1924—cases, 75; deaths, 66. January 1 to 15, 1925—cases, 54; deaths, 48. For distribution according to locality and type, see page 583.

MALTA

Lethargic encephalitis—Malta (undulant) fever—Typhoid fever—January 16-31, 1925.—During the period January 16 to 31, 1925, 6 cases of lethargic encephalitis, 16 cases of Malta (undulant) fever, and 2 cases of typhoid fever were reported in the Island of Malta. Population, 216,702.

MEXICO

Further relative to epidemic cerebrospinal meningitis, States of Guerrero and Oaxaca—Outbreak in State of Morelos.—The epidemic prevalence of cerebrospinal meningitis in the States of Guerrero and Oaxaca, Mexico, reported February 21, 1925,[1] was stated, February 26, 1925, to be unchanged. In the State of Morelos the disease was stated to have assumed an alarming character requiring energetic measures of control. At Jojutla churches and schools had been ordered closed by the department of health and it was proposed to adopt this measure at all points where new cases developed.

SALVADOR

Yellow fever—San Salvador—June–October, 1924.—The following statements in regard to yellow fever in the city of San Salvador, Republic of Salvador, from June to October 22, 1924, is taken from a report made to the Department of State:

During the month of June, 1924, yellow fever was definitely diagnosed in the city of San Salvador. The epidemic is believed to have terminated with the confirmation of a case at Ahuachapan, October 22, 1924. The total number of cases reported during the period covered by this report was 77, with 28 recorded deaths.

Early in October, 1924, the International Health Board, in cooperation with the National Health Board of Salvador, began a campaign directed against the yellow fever mosquito, *Aëdes aegypti.*

UNION OF SOUTH AFRICA

Plague—January 18–24, 1925.—During the week ended January 24, 1925, three cases of plague with one death, occurring in the native population, were reported in the Union of South Africa. For distribution of occurrence according to locality, see page 583.

Plague infection in wild rodents—De Aar District.—Information received under date of February 6, 1925, shows that plague infection in wild rodents had existed for two months previously to January 24, 1925, on the Ganzfontein and neighboring farms, about 40 miles south of De Aar, where, it is stated, five human cases of plague with two deaths have been reported. In this area, ground squirrels, springhares, and Cape hares (Vlakhaas) were said to be numerous, and heavy mortality among these animals was reported. Observations indicate that the infection was introduced, probably from a considerable distance, by some of these rodents. One of the cases notified, which was one of the pneumonic type, occurred in a native who lived in the open veld, slept at night in a "scherm" or inclosure of stones, and whose sole diet was mealie (maize) meal and the flesh of squirrels and springhares. One

[1] Public Health Reports, Mar. 6, 1925, p. 476.

of the first cases in the De Aar outbreak, infected on a farm and also of pneumonic type, gave a similar history. A study of rat fleas from infected localities was stated to be in progress, conducted by officials of the Department of Public Health.

Smallpox—Typhus fever—December, 1924.—During the month of December, 1924, 7 cases of smallpox, occurring in the native or colored population, and 114 cases of typhus fever with 21 deaths, of which 2 cases occurred in the European or white population, were reported in the Union of South Africa. For distribution of occurrence according to locality, see page 585.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended March 20, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Jan. 4-10, 1925: Cases, 2,328; deaths, 1,320.
Calcutta	Jan. 18-24	19	17	
Madras	Jan. 25-31	20	15	
Rangoon	Jan 18-24	1	1	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Canary Islands:				
Las Palmas	Feb. 4	1		
Ceylon:				
Colombo	Jan. 25-31	3		Four plague rodents.
Ecuador:				
Guayaquil	Feb. 1-15	14	5	Plague-infected rats: 76; rats taken, 12,165
Yaguachi	do	1	1	
India				Jan. 4-10, 1925: Cases, 4,299; deaths, 3,461.
Calcutta	Jan. 18-24	1	1	
Madras Presidency	Jan. 4-10	214	164	
Rangoon	Jan 11-24	20	17	
Java:				
East Java—				
Soerabaya	Dec 28-31	13	11	
Madagascar				
Tananarive Province				Dec 16-31, 1924: Cases, 75; deaths, 66. Jan. 1-15, 1925: Cases, 54; deaths, 48. Bubonic, pneumonic, septicemic.
Tananarive Town	Dec. 16-31	4	4	
Do	Jan. 1-15	1	1	
Other localities	Dec. 16-31	71	62	
Do	Jan. 1-15	53	47	
Morocco:				
Marrakech				Feb. 9, 1925: Present in native quarter of town. Stated to be pneumonic in form and of high mortality.
Union of South Africa				Jan. 18-24, 1925: Cases, 3; deaths, 1.
Orange Free State—				
Kroonstad District	Jan. 18-24	1	1	Native; on farm.
Transvaal—				
Boshof District	do	2		Do.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received During Week Ended March 20, 1925—Continued

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Arabia:				
Aden	Feb. 1-7	2		Imported.
Brazil:				
Pernambuco	Jan. 4-10	15	6	
British East Africa:				
Kenya—				
Mombasa	Jan. 18-24	1		
Canada:				
British Columbia—				
Vancouver	Feb. 22-28	44		
Ontario				Feb. 1-28, 1925. Cases, 14; deaths, 1. Corresponding period, 1924: Cases, 125; deaths, 14.
Ceylon:				
Colombo	Jan. 25-31	1		Port case.
China.				
Shanghai	Feb. 1-7	2	3	Deaths among Chinese.
France:				
St. Malo	Feb. 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis.
Germany.				
Frankfort-on-Main	Jan 1-10	1		
Great Britain				
Newcastle	Feb. 8-14	3		
India				Jan. 4-10, 1925: Cases, 2,442; deaths, 497.
Calcutta	Jan. 18-24	94	63	
Karachi	Feb. 1-7	13	2	
Madras	Jan. 25-31	39	13	
Rangoon	Jan. 11-24	123	20	
Japan:				
Nagasaki	Feb. 9-15	3		
Java:				
East Java—				
Soerabaya	Dec 28-31	23	4	
Mexico:				
Durango	Feb. 1-28		5	
Saltillo	Feb 22-28		1	
Tampico	Feb 11-28	17	7	
Vera Cruz	Feb 22-28		6	
Spain				
Cadiz	Jan. 1-31		9	
Malaga	Feb 15-21		5	
Valencia	Feb. 15-21	2		
Switzerland.				
Lucerne	Jan. 1-31	24		
Tunis:				
Tunis	Feb. 19-25	16	27	
Syria:				
Aleppo	Feb 8-14	10	2	
Union of South Africa				Dec. 1-31, 1924: Cases, 7; in colored population.
On vessel.				
S. S. Ruyth				At St. Malo, France, from Sfax, Tunis; believed to have imported smallpox infection.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received During Week Ended March 20, 1925—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Chile:				
Iquique	Feb. 1-7		1	
Egypt:				
Cairo	Dec. 17-23	1		
Turkey:				
Constantinople	Feb. 1-7	1	1	
Union of South Africa				Dec. 1-31, 1924: Cases, 112; deaths, 21, occurring in natives; in white population, 2 cases.
Cape Province				Dec. 1-31, 1924: Cases, 37; deaths, 8.
East London	Jan. 18-24	1		
Natal				Dec. 1-31, 1924: Cases, 25; deaths, 5.
Do				Jan. 18-24, 1925: Outbreaks.
Orange Free State				Dec 1-31, 1924: Cases, 38; deaths, 6.
Transvaal				Dec. 1-31, 1924: Cases, 12; deaths, 2.
Yugoslavia:				
Belgrade	Dec. 22-28	1		

YELLOW FEVER

Salvador:				
San Salvador	June-Oct. 1924	77	28	Last case, Oct. 22, 1924.

Reports Received from December 27, 1924, to March 13, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Nov. 29, 1924: Cases, 9; deaths, 8.
Colombo	Nov. 16-22	1		
Do	Jan. 11-24	2	2	
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 27,104; deaths, 16,228.
Bombay	Nov. 23-Dec. 20	4	4	
Calcutta	Oct. 26-Jan. 3	59	51	
Do	Jan. 4-17	20	20	
Madras	Nov. 16-Jan. 3	69	40	
Do	Jan. 4-24	74	53	
Rangoon	Nov. 9-Dec. 20	9	2	
Do	Jan. 4-10	4	3	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 14; deaths, 10.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept. 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov. 30-Dec. 6	1		
Siam:				
Bangkok	Nov. 9-29	4	2	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from December 27, 1924, to March 13, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 2-Jan. 3	30	13	
British East Africa.				
Tanganyika Territory	Nov 23-Dec. 27	17	10	
Uganda	Aug.-Nov., 1924	242	211	
Canary Islands:				
Las Palmas				Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec. 19	3	1	Vicinity of Santa Cruz de Teneriffe.
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-Jan. 3	12	9	
Do	Jan 4-24		4	One plague rodent.
China:				
Foochow	Dec 28-Jan. 3			Present.
Nanking	Nov. 23-Jan. 31			Do.
Shing Hsien	Oct., 1924		790	
Ecuador:				
Chimborazo Province—				
Alausi District	Jan. 14		14	At two localities on Guayaquil and Quito Railway.
Guayaquil	Nov. 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92.
Do	Jan. 1-31	17	7	Rats taken, 19,087; rats found infected, 68.
Egypt				Year 1924: Cases, 373. Jan. 1-28, 1925 Cases, 15.
City—				
Alexandria	Year 1924	2	2	Last case, Nov 26.
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec. 7.
Suez	do	20	13	Last case, Dec. 20.
Province—				
Dakhalia	Jan. 1-8	1	1	
Kalioubiah	do	3		
Menoufieh	do	7	3	
Gold Coast				Sept.-Oct., 1924. Deaths, 42.
Hawaii:				
Honokaa	Nov. 4	1		Plague-infected rodents found Dec. 9, 1924, and Jan. 15, 1925.
India				Oct. 19, 1924, to Jan. 3, 1925: Cases 28,154; deaths, 21,505.
Bombay	Nov. 22-Jan. 3	4	3	
Do	Jan 4-17	2	2	
Karachi	Nov 30-Dec. 6	2	1	
Do	Jan. 4-24	10	9	
Madras Presidency	Nov. 23-Dec. 20	528	379	
Do	Dec. 28-Jan. 3	157	108	
Rangoon	Oct. 26-Jan. 3	26	25	
Do	Jan. 4-10	8	6	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 25; deaths, 20.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Saigon	Jan. 11-17	2	1	Including 100 square kilometers of surrounding territory.
Japan	Aug. 10-Nov. 15	12		
Java.				
East Java—				
Blitar	Nov. 11-22			Province of Kediri; epidemic.
Pare	Nov 29			Do.
Soerabaya	Nov. 16-Dec. 13	53	55	
Do	Dec. 21-27	5	6	
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov. 18-Dec. 22		80	
Pekalongan	Oct. 14-Nov. 3		29	
Do	Nov. 18-Dec. 22		133	
Tegal	Oct. 14-Nov. 24		10	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from December 27, 1924, to March 13, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Madagascar				Nov. 1-Dec. 15, 1924: Cases, 254; deaths, 218.
Provinces—				
Itasy	Nov. 1-Dec. 15	4	2	
Moramanga	do	49	34	
Tananarive	Oct. 16-Dec. 15	223	208	Tananarive City (interior), Oct. 16-Nov. 30: Cases, 8; deaths, 7.
Towns (ports)—				
Fort Dauphin	Nov. 1-Dec. 15	12	5	
Majunga	Nov. 1-30	1	1	
Tamatave	do	1	1	
Mauritius Island				Sept. 7-Oct. 18, 1924: Cases, 60; deaths, 53.
Nigeria				Aug. - Oct., 1924: Cases, 309; deaths, 256.
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Siberia:				
Transbaikalia—				
Turga	Oct., 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Do	Jan. 4-17	3	2	
Syria:				
Beirut	Jan. 11-20	1		
Turkey:				
Constantinople	Jan. 9-15	5	5	
Union of South Africa	Jan. 4-17	10	3	
Cape Province—				
De Aar District	Nov 22-Jan. 3	4	1	Native.
Do	Jan 4-10	2		Natives; on farms.
Dronfield	Dec. 7-13	1		8 miles from Kimberley.
Kimberley	Dec. 7-27	3	2	
Maraisburg District	Nov. 22-Dec. 13	4	2	Bubonic, on Goedshoop Farm.
Orange Free State—				
Bloemfontein District	Dec 21-Jan. 3	5	2	
Do	Jan 11-17	1	1	Native; on farm.
Ficksburg District	Dec 28-Jan. 3	1	1	
Hoopstad District	Dec. 7-13	1		On farm.
Kroonstad District	Nov 22-Jan. 3	2	1	
Philippolis District	Dec. 21-27	1		
Vredefort District	Dec 7-20	2	2	On farms.
Steynsburg District	Jan. 4 10	1		Native; on farm. Province not stated.
Transvaal—				
Boshof District	Dec. 7-Jan. 3	3	3	On farm.
Do	Jan. 11-17	5	1	Native, 4 cases; white, one fatal case. On farms.
Smithfield	do	1		
Wolmaransstad District.	Nov. 22-29	1	1	On Farm Wolverspruit, Vaal River. Native.
On vessel:				
S. S. Conde				At Marseille, France, Nov. 6, 1924 Plague rat found. Vessel left for Tamatave, Madagascar, Nov 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 372.
Algiers	Jan. 1-31	5		
Arabia:				
Aden	Jan. 25-31	1		Imported.
Bolivia:				
La Paz	Nov. 1-Dec. 31	20	11	
Brazil:				
Pernambuco	Nov. 9-Jan. 3	100	27	
British East Africa:				
Uganda—				
Entebbe	Oct. 1-31	4		
British South Africa:				
Northern Rhodesia	Oct. 28-Dec. 15	57	2	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from December 27, 1924, to March 13, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Canada:				
British Columbia—				
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-Feb. 21	162		
Victoria	Jan. 18-Feb. 7	2		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-Feb. 27	30		
New Brunswick—				
Bonaventure and Gaspe Counties.	Jan. 1-31	1		
Northumberland	Feb. 8-14	1		County.
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33. Dec. 28, 1924, to Jan. 31, 1925: Cases, 27.
Hamilton	Jan. 24-30	1		
Ceylon				July 27-Nov. 29, 1924: Cases, 27; deaths, 1
Colombo	Jan. 18-24	2		
China:				
Amoy	Nov. 9-Jan. 24			Present.
Antung	Nov. 17-Dec. 28	5		
Do	Jan. 5-18	4		
Foochow	Nov. 2-Jan. 27			Do.
Hongkong	Nov. 9-Jan. 3	6	2	
Nanking	Jan. 4-17			Do.
Shanghai	Dec. 7-27	1	2	
Do	Jan. 18-24	1		
Chosen:				
Seoul	Dec. 1-31	1		
Czechoslovakia				Apr.-June, 1924: Case, 1; occurring in Province of Maravia.
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 31	10		
Do	Jan. 8-28	8		
Esthonia				Dec. 1-31, 1924: Cases, 2
France				July-Nov., 1924: Cases, 69
Germany				June 29-Nov. 8, 1924. Cases, 7.
Gibraltar	Dec. 8-14	1		
Gold Coast				July-Sept., 1924: Cases, 82; deaths, 1.
Great Britain:				
England and Wales	Nov. 23-Jan. 3	472		
Do	Jan. 4-24	351		
Newcastle-on-Tyne	Jan. 18-Feb. 7	5		
Greece				Jan.-June, 1924: Cases, 170; deaths, 27.
Do				July-Nov., 1924: Cases, 30; deaths, 26.
Saloniki	Nov. 11-Dec. 22	3		
India				Oct 19, 1924, to Jan. 3, 1925: Cases, 12,564; deaths, 2,857.
Bombay	Nov. 2-Jan. 3	30	18	
Do	Jan. 4-17	17	11	
Calcutta	Oct. 26-Jan. 3	307	170	
Do	Jan. 4-17	168	101	Mar. 5, 1925: Epidemic.
Karachi	Nov. 16-Jan. 3	16	2	
Do	Jan. 4-31	26	3	
Madras	Nov. 16-Jan. 3	122	48	
Do	Jan. 4-24	73	23	
Rangoon	Oct. 26-Jan. 3	86	28	
Do	Jan. 4-10	33	4	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 223 deaths, 76.
Province—				
Anam	Aug. 1-Sept. 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov. 16-Jan. 3	17	5	Including 100 sq. km. of surrounding country.
Do	Jan. 4-10	3	1	
Tonkin	Aug. 1-Sept. 30	19	7	
Irrq:				
Bagdad	Nov. 9-Dec. 27	2	1	
Italy				June 29-Dec. 6. 1924: Cases. 61.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from December 27, 1924, to March 13, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Jamaica				Nov. 30-Jan. 3: Cases, 50. Reported as alastrim.
Do				Jan. 4-31, 1925: Cases, 43. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim.
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Java:				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in two native villages.
Soerabaya	Oct. 19-Dec. 27	662	208	
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov. 14	2		
Do	Dec. 20-Jan. 2	19	*4	
Cheribon	Oct. 14-Nov. 24	15		
Pekalongan	do	22		
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5.
Mexico:				
Durango	Dec. 1-31		5	
Do	Jan. 1-31		5	Town and district.
Guadalajara	Dec. 23-29		1	
Do	Jan. 6-12		1	
Mexico City	Nov. 23-Dec. 27	5		
Do	Jan. 11-31	5		
Monterey				Jan. 24, 1925: Outbreak.
Salina Cruz	Dec. 1-31	1	1	
Tampico	Dec. 11-31	5	4	
Do	Jan 1-Feb. 10	23	8	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan. 5-Feb. 15		25	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Nigeria				Jan.-June, 1924: Cases, 357; deaths, 87.
Do				July-Oct., 1924: Cases, 10; deaths, 2.
Persia:				
Teheran				Sept. 23-Dec. 21, 1924: Deaths, 12.
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept. 21-Nov. 29, 1924: Cases, 19; deaths, 2.
Portugal:				
Lisbon	Dec 7-Jan. 3	17		
Do	Jan 4-Feb. 7	45		
Oporto	Nov. 30-Dec. 27	3	2	
Do	Jan. 11-17	1		
Russia				Jan.-June, 1924: Cases, 9,083. July-Sept., 1924. Cases, 1,251.
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Cadiz	Nov. 1-Dec. 31		51	
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-Feb. 14		63	
Valencia	Nov. 30-Dec. 6	2		
Switzerland:				
Lucerne	Nov. 1-Dec. 31	19		
Syria:				
Aleppo	Nov. 23-Dec. 27	13		
Do	Jan. 4-Feb. 7	45	15	
Damascus	Jan. 6-13	2		
Tunis:				
Tunis	Nov. 25-Dec. 29	42	35	
Do	Jan. 1-14		29	
Do	Jan. 22-Feb 18		93	
Turkey:				
Constantinople	Dec. 13-19	5		
Union of South Africa				Nov. 1-30, 1924: Cases, 7.
Cape Province	Nov. 9-Jan. 17			Outbreaks.
Orange Free State	Nov. 2-8			Do.
Transvaal	Nov. 9-Jan. 10			Do.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from December 27, 1924, to March 13, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Uruguay				Jan.-June, 1924: Cases, 101; deaths, 2
Do				July, 1924: Cases, 25; deaths, 3.
On vessel:				
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 101; deaths, 14.
Algiers	Nov. 1-Dec. 31	5	1	
Do	Jan. 1-31	3	3	
Bolivia:				
La Paz	do	3		
Bulgaria				Jan.-June, 1924: Cases, 191; deaths, 28.
Do				July-Oct., 1924. Cases, 5.
Chile:				
Concepcion	Nov 25-Dec. 1		1	
Do	Jan. 6-12		2	
Iquique	Nov. 30-Dec 1		2	
Talcahuano	Nov 16-Dec. 20		5	
Do	Jan. 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-31		4	
Chosen:				
Seoul	Nov. 1-30	1	1	
Egypt.				
Alexandria	Dec. 3-9	1	1	
Cairo	Oct. 1-Dec. 16	12	8	
Esthonia				Dec 1-31, 1924: Cases, 5.
France				July-Oct, 1924: Cases, 7.
Gold Coast				Oct 1-31, 1924: 1 case
Greece				May-June, 1924. Cases, 116; deaths, 8.
Do				July-Nov, 1924. Cases, 35; deaths, 4.
Saloniki	Nov. 17-Dec. 15	3	2	
Do	Jan. 25-31	1		
Japan				Aug. 1-Nov. 15, 1924: Cases, 2.
Latvia				Oct.-Nov., 1924: Cases, 16.
Lithuania				Aug.-Oct., 1924: Cases, 15; deaths, 1.
Mexico:				
Durango	Dec. 1-31		1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District.
Do	Jan. 11-31	29		Do.
Palestine				Nov. 12-Dec. 8, 1924: Cases, 7.
Ekron	Dec. 23-29	1		
Jerusalem	do	2		
Do	Jan 20-26	1		
Mikveh Israel	do	1		
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept. 28-Dec. 5, 1924: Cases, 379 deaths, 22.
Portugal:				
Lisbon	Dec. 29-Jan. 4		2	
Oporto	Jan. 4-Feb. 7	2		
Rumania				Jan.-June, 1924: Cases, 2,906; deaths, 328.
Do				July-Aug., 1924: Cases, 89; deaths, 12.
Constanza	Dec. 1-10	1		
Russia				Jan. 1-June 30, 1924: Cases, 92,000. July-Sept., 1924: Cases, 5,225.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 13, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Sweden:				
Goteborg	Jan. 18-24	1		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Turkey:				
Constantinople	Nov. 15-Dec. 19	6	1	
Do	Jan 2-22	6		
Union of South Africa				Nov. 1-30, 1924: Cases, 233; deaths, 66.
Cape Province	Nov. 1-30	89	16	Dec. 21, 1924-Jan. 17, 1925: Outbreaks.
East London	Nov. 16-22	1		
Natal	Nov. 1-30	105	45	Dec. 14-20: Outbreaks.
Orange Free State	do	21	2	Dec. 7, 1924-Jan. 17, 1925: Outbreaks
Transvaal	do	18	3	
Yugoslavia				Aug. 3-Oct. 18, 1924: Cases, 17; deaths, 2
Belgrade	Nov 24-Dec 7	4		

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Gold Coast	October, 1924	3	3	

TREASURY DEPARTMENT

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UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

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PUBLIC HEALTH REPORTS

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Results Obtained with the Dick Test Before and After Immunization With the Toxin of the Hemolytic Streptococcus of Scarlet Fever

By R. E. DYER, Surgeon, with the assistance of B. T. SOCKRIDER, Laboratory Assistant, Hygienic Laboratory, United States Public Health Service

In the latter part of November, 1924, scarlet fever appeared among the 328 inmates of a boys' school located in the District of Columbia. On the request of the authorities of the school and in cooperation with the health department of the District of Columbia, the Dick test [1] was made on each of the boys, and those showing positive reactions were given injections of the scarlet fever streptococcus toxin for purposes of immunization against scarlet fever.[2] Three weeks after the last immunizing dose of toxin, a retest was made to determine the degree of immunity produced against the toxin.

The original tests to determine susceptibility were made with a toxin made and standardized by Drs. George F. and Gladys H. Dick, to whom we are particularly indebted. The toxin of this particular batch was of sufficient strength to give the Dick standard skin reaction when 0.1 cubic centimeter of a 1:1,750 dilution was injected intracutaneously. Phenol, 0.5 per cent, had been added to the toxin at the time of its manufacture, some six months before this study was undertaken. Final dilution of this toxin was made on December 7, and the tests were performed on the three succeeding days.

One-half cubic centimeter Record syringes, graduated in tenths of a cubic centimeter, with luer tips and fitted with one-half inch 26-gauge Summit needles, were used.[1,3] Care was taken to inject 0.1 cubic centimeter amounts. The injections were made in the skin over the flexor surface of the forearm, about the junction of the upper and middle thirds.

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[1] Dick, G. F., and Dick, Gladys H.: A Skin Test for Susceptibility to Scarlet Fever. J. A. M. A., 82:265, Jan. 26, 1924.

[2] Dick, G. F., and Dick, Gladys H.: Scarlet Fever Toxin in Preventive Immunization. J. A. M. A. 82:544, Feb. 16, 1924.

[3] Dick, G. F., and Dick, Gladys H.: Scarlet Fever. Amer. Jour. Pub. Health, XIV, 1022, December, 1924.

Two controls were used. A heated control,[4] consisting of toxin diluted for use and immersed in water, which was then brought to boiling and kept at that temperature for one hour. For the second control the uninoculated diluted Dick medium was used.[1]

The test toxin was injected in the right forearm by one operator and the two controls in the left forearm by a second. All syringes and needles were boiled one hour at the close of each day's work in order to destroy any remaining toxin.

The skin was cleansed with acetone or alcohol and allowed to dry. Before each injection the needles were wiped with gauze saturated with the solution used for cleansing the skin. Frequent change of needles was made, but not usually before each injection. During the course of the study nothing of the nature of an infection was noted.

A little less than half of the boys tested were negroes, and it was found that the reactions in the darker-skinned negroes were often difficult to read. In some it was noted that the skin, in addition to showing some shade of red in the reacting area, had a shiny, smoothed-out appearance, probably caused by slight swelling.

In judging the reactions the conclusion of Drs. George F. and Gladys H. Dick,[3] was followed, i. e., that an area of reddening 1 centimeter or more in diameter 24 hours after injection constitutes some degree of a positive reaction, and that an area of reddening less than 1 centimeter in diameter is a negative test. Consequently only those reactions were considered as positive which measured 1 centimeter in at least one diameter; and in determining a pseudo, or positive combined, reaction, those reactions caused by the control solution which measured less than 1 centimeter in both diameters were disregarded.

TABLE 1

Total number tested on original test	328
Average age ... years	16.8
Per cent positive	17.1
Average age of those positive ... years	16.2
Number of white boys tested	189
Average age ... years	17.0
Per cent positive	14.3
Average age of those positive ... years	16.7
Number of colored boys tested	139
Average age ... years	16.6
Per cent positive	20.9
Average age of those positive ... years	16.6

[1] Dick, G. F., and Dick, Gladys H.. A Skin Test for Susceptibility to Scarlet Fever. J. A. M. A., 82:265, Jan. 26, 1924.

[3] Dick, G. F., and Dick, Gladys H.: Scarlet Fever. Amer. Jour. Pub. Health, XIV, 1022, December, 1924.

[4] Zingher, A.. The Dick Test in Normal Persons and in Acute and Convalescent Cases of Scarlet Fever. J. A. M. A. 83 432, Aug. 9, 1924.

The length of residence of the boys at the school prior to the date of testing varied from a few days to three years, the average length of residence being about 12 months. The majority of the boys came from city homes; and in regard to possible exposure to infections prior to coming to the school, it is thought that the group as a whole was comparable to the average public-school group of like age in a large city.

In the positive reactions a slight degree of swelling of the skin and a moderate degree of redness were the rule. In the larger reactions the redness was of a deeper shade; and in one with outside measurements of 23 by 32 millimeters the center over an area 14 by 14 millimeters was of a deeper red and was elevated above the rest of the reacting area.

Disregarding the reactions of the control solutions which measured less than 1 centimeter in diameter, only one reaction was noted in the original test which might fall into the group described by Zingher as "positive combined" and one which would fall into Zingher's "pseudo" group.[4]

The boys showing positive reactions were divided into two groups. One group was immunized with toxin to which no preservative had been added, while the second group was immunized with the same toxin containing 0.5 per cent phenol.

Dilutions for immunization were made the day before each immunizing injection, the dose for the day being contained in 1 cubic centimeter of solution. Physiological saline solution was used as a diluent. The first immunizing dose contained 125, the second 500, and the third, 1,000 skin test doses.

The immunizing doses were given at weekly intervals, and on the day following each injection each boy was seen, the reacting areas were measured, and other notes were made of local and general reactions. (See Tables 2 and 3.)

Three weeks from the date of the final immunizing dose each immunized boy was retested with a test toxin to which no preservative had been added and with the same toxin containing 0.5 per cent phenol. Three controls were used on the final test, each of the two test toxins immersed in boiling water one hour before using, and a medium control.

For various reasons 11 of the boys who gave positive reactions on the original test were not given all of the immunizing doses and 1 boy was not retested. These 12 boys have been left out of Tables 2 and 3.

[4] Zingher, A., The Dick Test in Normal Persons and in Acute and Convalescent Cases of Scarlet Fever. J. A. M. A. 83:132, Aug. 9, 1924.

TABLE 2.—*Showing original test reactions, reactions to immunizing doses, and retest reactions. (Toxin without preservative was used in immunizing this group)*

Test No.	First test made with phenolized toxin: Toxin[1]	Heated control	Medium control	Immunizing doses and reactions: First dose, 125 skin-test doses	Second dose, 500 skin-test doses	Third dose, 1,000 skin-test doses	Retest after immunization: Toxin without phenol	Toxin with phenol	Heated non-phenolized control	Heated phenolized control	Medium control
189	28×35	0	0	20×30, red, swollen	55×50, red, swollen, hard	60×70, pink, slight swelling	0	0	0	0	0
240	25×33	0	4×6	50×40, red, swollen	70×90, red, swollen, hard, sore in axilla.	75×80, pink, slight swelling	0	0	0	0	6×6
119	23×32	0	5×5	50×70, red, swollen, malaise	65×90, red, swollen, hard	75×100, red, swollen, hard	18×18	12×17	0	0	0
24	28×27	10×10	10×8	60×60, red, swollen	85×100, red, swollen, hard	90×100, red, swollen	4×4	0	0	0	0
21	25×25	0	2×3	60×70, red, swollen	60×100, red, swollen	80×80, red, swollen	0	13×13	0	0	0
29	23×23	0	6×5	60×70, red, swollen	75×95, red, swollen, hard	85×90, red, swollen	0	0			0
14	23×23	0	8×8	40×40, red	45×40, red	20×20, pink	9×9	17×17	11×11	12×12	19×21
245	22×19	0	4×7	25×40, pink	75×100, red, swollen, hard, sore in axilla	55×90, pink, slight swelling	15×15	0	0	0	0
275	20×20	0	0	40×50, red, slight swelling	80×90, pink	75×100, pink, slight swelling	13×13	15×18	0	0	12×12
87	20×20	0	3×5	45×70, red, swollen	65×85, pink, slight swelling	80×90, red, sore throat, malaise	0	0	0	10×10	0
71	18×19	0	4×6	50×70, red, swollen	40×65, pink	70×80, pink, swollen	17×17	16×17	0	0	0
256	18×18	0	0	50×30, pink, slight swelling	40×60, pink, slight swelling	None	0	0	0	0	0
291	18×16	0	0	40×40, red, swollen	55×80, red, swollen, hard	40×50, slight swelling	18×18	16×16	0	0	0
263	17×15	0	0	None	50×50, slight swelling	None	0	0	4×4	4×4	4×4
125	13×15	0	0	30×40, pink, slight swelling	40×55, red, swollen	35×45, pink, slight swelling	0	0	0	0	0
268	14×14	3×6	0	None.	Not seen	30×40, pink	0	11×15	0	0	8×8
235	12×11	5×5	2×5	25×25, pink	20×40, slight swelling	30×40, slight swelling	0	0	0	0	0
202	10×13	0	5×5	20×30, red, swollen	50×40, pink, slight swelling	40×45, pink	0	7×7	0	0	0
31	10×12	5×7	3×5	25×25, pink	35×45, pink, slight swelling	35×40, pink	0	9×9	0	8×8	8×9
231	11×9	0	6×6	None	40×60, red, swollen, hard	None	6×6	13×13	4×4	8×8	0
272	10×9	4×4	6×6	do	45×57, pink	do	4×4	0	0	0	0
188	10×8	5×6	5×5	25×30, red, swollen	30×45, red, swollen	20×30, slight swelling	0	0	0	0	0

[1] All measurements in this and following tables are expressed in millimeters.

In Table 2, No. 24 is classed as combined on the original test. The result recorded on retest in No 14 with the phenolized toxin and controls is confusing. For the purpose of tabulation, the retest of this case has been considered as negative with the nonphenolized and pseudo with the phenolized toxin. No. 275 is still positive with both toxins on retest when compared with the heated controls, while comparison with the medium control changes the reading to pseudo or combined. No 263 gives a history of having had scarlet fever in 1921.

Table 3.—*Showing original test reactions, reactions to immunizing doses, and retest reactions. (Toxin with 0.5 per cent phenol was used in immunizing this group.)*

Test No.	First test made with phenolized toxin			Immunizing doses and reactions			Retest after immunization				
	Toxin	Heated control	Medium control	First dose, 125 skin test doses	Second dose, 500 skin test doses	Third dose, 1,000 skin test doses	Toxin without phenol	Toxin with phenol	Heated non-phenol control	Heated phenolized control	Medium control
204	21×28	0	0	50×60, red, swollen	40×70, slight swelling	None	0	0	0	0	0
179	20×28	0	4×4	40×50, red, swollen	70×90, red, swollen	75×100, pink	0	0	0	0	0
22	22×26	2×4	4×6	do	55×75, red, swollen, hard	75×80, pink	0	9×9	0	3×3	10×10
140	23×23	5×7	5×6	50×60, red, swollen	60×90, red, swollen, headache	80×100, red, swollen	17×23	13×20	0	0	0
27	24×22	0	3×3	50×50, red, swollen	50×55, pink, slight swelling	55×60, pink	0	0	0	6×8	11×13
199	20×22	0	5×7	40×40, red, swollen	40×60, red, swollen, hard	None	0	0	0	0	0
264	21×20	0	0	50×50, red, swollen	65×80, red, swollen, hard, sore in axilla.	40×50, slight swelling	0	0	0	0	5×5
234	20×20	0	0	do	70×90, red, swollen, hard	70×95, pink, slight swelling	0	0	0	0	0
100	17×23	6×7	5×6	50×50, slightly red	65×80, red, swollen	70×80, pink, slight swelling	0	0	0	0	0
123	17×20	4×6	4×5	40×50, red, swollen	22×25, pink, slight swelling	30×40, pink, slight swelling	0	0	0	0	0
257	17×19	4×4	5×6	None	85×100, red, swollen	70×80, slight swelling	0	0	0	0	0
273	17×17	2×7	4×7	45×60, pink, swollen	50×60, pink, slight swelling	75×90, pink, slight swelling	0	13×13	0	0	0
292	16×18	0	0	40×40, slight swelling	25×30, pink, slight swelling	None	0	0	0	0	5×5
208	15×18	0	0	None	25×30, slight swelling	30×30, slight swelling	5×5	0	0	0	0
65	15×14	0	0	20×30, pink, slight swelling	45×50, pink, slight swelling	25×20, faint	3×3	0	0	0	4×4
277	13×13	0	0	None	40×40, pink, slight swelling	40×45, slight swelling	0	0	0	0	0
239	11×12	4×6	0	25×25, pink, slight swelling	40×50, red, swollen, hard, sore in axilla.	None	0	0	0	0	0
103	10×12	5×5	4×9	25×25, pink	45×50, red, swollen, hard	45×45, faint	0	0	0	0	8×8
296	10×12	7×8	3×5	do	40×45, pink, swollen	30×40, pink, swollen	0	0	0	3×5	4×6
279	10×11	5×7	7×6	30×30, pink	35×45, pink, swollen	None	0	0	0	0	0
145	10×10	0	4×5	20×40, red, swollen	30×35, pink, slight swelling	40×50, pink, slight swelling	0	11×11	0	10×10	12×12
255	10×9	0	0	25×25, red, swollen	40×30, pink	35×40, faint	0	0	0	0	0
195	10×9	7×7	0	20×30, pink	40×55, pink, swollen	25×30, faint	0	7×7	0	4×4	0

Note.—In this table Nos. 22 and 27 on retest give reactions with the medium control, for which no explanation is offered. (See No 87, Table 2, heated phenolized control.) Case No. 65 gives history of scarlet fever in 1913, case No. 103 gives history of scarlet fever in 1907, case No. 195 gives history of scarlet fever in 1922.

TABLE 4.—*Summary of results of Dick tests three weeks after prophylactic inoculations*

Number of cases immunized with toxin without a preservative	22
Number of cases giving pseudo reactions to the phenolized toxin on retest (No. 14, No. 275)	2
Number of cases giving pseudo reactions to the nonphenolized toxin on retest (No. 275)	1
Number of cases found negative to both toxins on retest	13
Number of cases found negative to the unpreserved toxin on retest	17
Number of cases found negative to the preserved toxin on retest	14
Number of cases immunized with toxin which had been preserved with 0.5 per cent phenol	23
Number of cases giving pseudo reaction to the phenolized toxin on retest (No. 145)	1
Number of cases found negative to both toxins on retest	20
Number of cases found negative to the unpreserved toxin on retest	22
Number of cases found negative to the preserved toxin on retest	20

On study of the two groups it will be noted that the preserved toxin used in immunization seems to have given better results than the toxin which contained no preservative. It is thought, however, that the groups are too small to draw any definite conclusion to that effect. It may safely be said that there is no indication in this study that the addition of the 0.5 per cent phenol to the toxin in any way vitiated its immunizing potency.

In the great majority of the 45 cases recorded in Tables 2 and 3, the reactions caused by the immunizing doses were local only. Malaise was noted in one instance after the first immunizing dose, headache was noted in one case after the second dose, and sore throat coupled with malaise was noted in one case after the third dose. In four instances the boys complained of "soreness" in the axilla after the second dose. In some cases the swelling occasioned by the immunizing dose was fairly hard to the touch. In general, the more severe reactions occurred after the second dose.

It is not thought that the data here presented can be interpreted in favor either of a medium control alone or of a heated control. As far as practical results are concerned it would have made no difference had no controls been used in the original test and, in the retest after immunization, the use of controls changed the readings in only three cases (Nos. 145, 14, and 275).

In addition to the boys who were positive on the original test, 38 boys who gave negative reactions on the original test were given the immunizing doses of the toxin. One of these was not retested; 31 were negative on retest. The reactions of the remaining six are given in Table 5.

The 38 cases referred to immediately above gave in each instance a mild local and no suggestion of a general reaction to the immunizing doses.

TABLE 5.—*Showing original test reactions, doses of toxin given in immunization, and retest reactions in certain cases.*

Case No	Original test			Immunizing doses	Retest after immunization				
	Toxin	Heated control	Medium control		Toxin without phenol	Toxin with phenol	Heated non-phenol control	Heated phenolized control	Medium control
312	9×9	0	0	First dose, 250 skin test doses Second dose, 500 skin test doses No third dose given	12×12	13×13	4× 4	0	0
4	8×9	5×8	8×8	First dose, 125 skin test doses Second dose, 500 skin test doses No third dose given	0	10×10	10×10	9× 9	0
278	7×8	4×4	5×5	First dose, 125 skin test doses Second dose, 500 skin test doses Third dose, 1,000 skin test doses	0	13×13	4× 4	5× 5	12×12
266	6×5	3×3	0	Same as No 278	12×12	13×18	13×13	7× 7	15×15
271	5×6	0	0	do	0	10×10	0	0	0
46	4×5	0	0	do	9× 9	11×11	10×10	15×15	13×13

Cases 312 and 266 received immunizing doses of non-phenolized toxin, the others received phenolized toxin. Cases 4, 278, and 266 gave history of having had scarlet fever prior to admission to the school.

In Table 6 are given the results of tests made on the cases diagnosed as scarlet fever by the attending physician. All of the cases were mild in type, the rash in some instances lasting less than 24 hours. The main clinical observations are recorded in the table.

In cases 5, 66, 54, 84, and 29, the onset of illness was within 48 hours after an immunizing dose of the toxin had been given. It is possible that the symptoms noted in these cases may have been caused by severe reactions to the immunizing toxin. The fact that in two (5 and 66) only the first immunizing dose was given and the retest later resulted in negative reactions may be taken as evidence that the illness was scarlet fever and not a severe reaction to the immunizing dose of toxin. Case 54 was not retested with the heated controls, but from the reaction noted with the medium control it is possible that the retest reaction is psuedo in character as was the original test reaction in this case.

In case 113 the rash lasted less than 24 hours; the illness was mild and the desquamation not typical.

The reaction noted at the site of the immunizing injection in case 41, after the development of the rash of scarlet fever, is somewhat similar to that noted by Zingher in two cases where scarlet fever developed in individuals who had had positive Dick reactions a short time previously.[4]

As stated earlier in this paper, all reactions showing more than the needle puncture were measured and recorded in millimeters, those less than 10 millimeters in one diameter being considered negative. A tabulation of these negative reactions is given in Table 7.

[4] Zingher, A.: The Dick Test in Normal Persons and in Acute and Convalescent Cases of Scarlet Fever. J. A. M. A., 83, 432, Aug. 9, 1924.

TABLE 6.—*Showing Dick test reactions on cases diagnosed as scarlet fever. Two cases (9 and 15) are included, although no diagnosis of scarlet fever was made on either case*

Case No.	Original test: Date (1924)	Original test: Toxin	Original test: Heated control	Original test: Medium control	Clinical notes	Retest on Jan. 16, 1925: Non-phenolized toxin	Retest: Phenolized toxin	Retest: Heated non-phenolized control	Retest: Heated phenolized control	Retest: Medium control
302	Dec. 10	0	0	0	Sick Nov. 18; headache, sore throat, vomiting Rash on Nov. 19. Fever Nov. 19 to 27. Desquamation began Nov 27	(1)				
307	do	0	0	0	Sick Nov. 26; sore throat, vomiting Slight rash noted on Nov 28. Fever Nov. 28 to Dec. 5. Slight desquamation noted Dec. 3	0	0	0	0	0
303	do	0	0	0	Sick Dec. 1; headache, sore throat Rash Dec. 3. First temp. record on Dec. 4—99.4° F. Normal temp. thereafter. Desquamation Dec. 8	0	0			0
305	do	0	0	0	Sick Dec. 4; headache. Admitted to hospital Dec. 6 with headache; temp 100° F Slight rash on Dec. 7. Temp normal Slight desquamation noted on hands and feet on Dec. 10. Desquamation noted again on Jan. 5	0	0			0
306	do	0	0	0	Sick Dec. 6; headache, sore throat, rash Temp 102° F Temp normal thereafter. Urticaria on Dec 12 Desquamation noted Dec. 14	0	0	0	0	0
304	do	5×7	4×7	4×7	Sick Dec. 7, headache, sore throat Temp. 104° F. on Dec. 9, 99° F on Dec. 10. Normal thereafter. No rash Desquamation slight on Jan 8	0	0			0
5	Dec. 8	21×20	3×5	4×4	Immunization started with 125 skin test doses on Dec 12 Sick Dec 13, headache, sore throat. Rash on Dec. 14. Fever Dec 13 to 19 Desquamation noted Dec 23	0	0	0	0	0
66	do	18×18	3×5	4×6	Immunization started with 125 skin test doses on Dec. 12. Sick Dec 13, sore throat, headache Rash on Dec 15 No fever Desquamation Jan 6	0	0			0
54	do	13×13	15×15	14×13	Immunization started with 125 skin test doses on Dec. 12. Sick Dec. 14, sore throat. Rash on Dec. 17. Fever Dec 16 to 18. Desquamation Jan 8	6×6	10×10			9×9
41	do	19×20	0	0	Immunization started with 125 skin test doses on Dec 12 Sick Dec 16. sore throat. Rash on Dec. 18. Temp. 100° F. on Dec. 18 Normal thereafter Desquamation Jan. 12 The immunizing injection of Dec. 12 caused a moderate local reaction which measured 40 by 50 m m. on Dec. 13. Two days after the appearance of the scarlet fever rash and while the rash was still present, though fading, the area which had reacted to the immunizing dose was a darker red than the surrounding skin, with a pale area of normal skin in the center	0	0	0	0	0
83	do	18×33	0	0	Immunization started with 125 skin test doses on Dec. 12. Sick Dec. 17, headache, sore throat, rash. Fever recorded Dec 18 to 20 Desquamation on face Dec 20 Desquamation noted on Jan. 19	0	0			0
113	Dec. 9	0	0	3×5	Sick Dec. 17, sorethroat, rash. Temp. 101 8° F on Dec. 18, 99 4° F. on Dec 19. Normal thereafter. Desquamation noted Jan. 17	0	0			0
92	Dec. 8	17×23	0	4×4	Immunization started with 125 skin test doses on Dec. 12. Sick Dec 19; headache, sore throat Slight rash noted Dec. 19 Disappeared in 24 hours. Temp. 100 6° F. on Dec. 19, 99 6° F. on Dec. 20. Normal thereafter. Desquamation noted Jan. 19	0	0			0
84	do	10×10	6×7	8×8	Immunizing doses given as follows. 125 skin test doses on Dec 12; 500 skin test doses on Dec 19. Sick Dec. 18; headache, sore throat. Rash Dec. 19. Temp. 102.4° F. on Dec. 19 and 99.8° F. on Dec. 20. Normal there after. Desquamation Jan. 16	4×4	0			0

29	---do----	23×23	0	6× 5	Immunizing doses given as follows: 125 skin test doses on Dec. 12; 500 skin test doses on Dec. 19; 1,000 skin test doses on Dec. 26. Sick Dec. 27, headache, sore throat. Rash on Dec. 28. Temp 100° F on Dec 29, 101° F. on Dec 30, 100.4° F. on Dec. 31 Normal thereafter. Desquamation Jan 8	0	0	--------	--------	0
9	---do----	10× 8	8× 6	5× 5	Immunization started with 125 skin test doses on Dec. 12: sore throat at that time. Left ear painful on Dec. 15. Drum lanced on Dec. 18. No further immunization given	3× 6	0	0	5× 5	0
15	---do----	17×20	3× 4	3× 4	Immunization started with 125 skin test doses on Dec 12. Sore throat on Dec 20 and was isolated in scarlet fever ward over night. Discharged as not having scarlet fever on Dec. 21. 500 skin test doses given on Dec. 26	16×20	16×17	0	4× 4	0

[1] Not retested.

Cases 5, 66. 41, 83, 84, and 9 received immunizing toxin containing phenol Cases 54, 29 and 92 received immunizing doses of toxin which did not contain phenol.

TABLE 7 —*Negative reactions*

Total negative reactions considered	272
Showing only needle puncture	78
Test toxin and both controls reacting	64
Test toxin and medium control reacting, with the heated control not reacting	37
Test toxin and heated control reacting, with the medium control not reacting	13
Both controls reacting, with the test toxin not reacting	12
Test toxin alone reacting	25
Medium control alone reacting	31
Heated control alone reacting	12

With few exceptions (see Table 8) the small reactions tabulated above consisted of slight, elevated, indurated areas, deep pink in color, with an average diameter of 5 millimeters. It seems probable that many of these small reactions were caused by traumatism. On retesting this group after a lapse of six weeks the same reactions did not, as a rule, occur in the same individuals.

TABLE 8.—*Showing certain atypical reactions*

Case No.	Original test			Retest		
	Test toxin	Heated control	Medium control	Test toxin	Heated control	Medium control
290	7×8	6×10	6×7	0	0	0
8	5×5	0	10×7	0	6×8	3×3
219	5×5	3×5	10×8	0	0	0
08	3×6	7×8	10×10	0	0	0
212	0	10×11	0	0	0	0

At the time of retesting the boys who had been immunized and those who had had scarlet fever, the entire school was retested with two dilutions (1:1,750 and 1:1,000) of the toxin made and standardized by Drs. G. F. and G. H. Dick and two other toxins which will be referred to as toxins A and B. The Dicks' standard toxin in the 1:1,000 dilution was not used on the boys who had received the immunizing injections nor on the scarlet fever convalescents. As some of the boys had left the school after the original test and before the retest, there were only 315 boys tested with the three toxins.

Toxin A and toxin B were produced by hemolytic streptococci of scarlatinal origin, but not by the two strains used by Drs. G. F. and G. H. Dick in the production of their standard toxin. Toxin A was prepared with a nonblood medium and had been standardized to give a skin test dose when 0.1 cubic centimeter of a 1:400 dilution was injected. Toxin B was prepared with a medium containing blood and had been standardized at a dilution of 1:5,000 for skin test.

Table 9 shows the results of the tests with the three toxins.

TABLE 9.—*Summary of tests with three toxins*

Tested with three toxins, Dicks' standard toxin (dilution 1:1,750), toxin A, and toxin B	315
Tested with the Dicks' standard toxin in two dilutions (1:1,000 and 1:1,750), toxin A, and toxin B	214
Negative to the Dicks' standard toxin in two dilutions and to toxin A and toxin B	100
Negative to the Dicks' standard toxin in dilution 1:1,750 and to toxin A and toxin B	136
Negative to the Dicks' standard toxin in dilution 1:1,750, pseudo to toxin A, and negative to toxin B	126
Negative to the Dicks' standard toxin in two dilutions (1:1,000 and 1 : 1,750), pseudo to toxin A, and negative to toxin B	89
Cases showing other variations in reactions	53

The pseudo reactions caused by toxin A measured from 1 to 2 centimeters in at least one diameter. The most probable explanation for the high number of pseudo reactions caused by this toxin seems to be the low dilution of the medium used.

The 53 cases referred to in the last line of Table 9 are listed below in Table 10. For convenience the reactions have been divided into groups.

In group 1 of Table 10 the reactions produced by the various toxins are positive and in practical agreement. Groups 2 and 4 show 12 cases in which the Dicks' standard toxin in the 1:1,750 dilution is positive or pseudo, while toxin B is negative. In 9 of these cases toxin A shows pseudo reactions. In group 3 are 3 cases in which the 1:1,750 dilution of the Dicks' standard toxin is positive or psuedo, toxin B positive, and toxin A negative. Group 5 shows 8 cases in which toxin A has given rise to pseudo or positive combined reactions, while the 1:1,750 dilution of the Dicks' standard toxin and toxin B have developed no reactions. In these 8 cases it will be noted that the 1:1,000 dilution of the Dicks' standard toxin has caused positive or pseudo reactions. Group 6 shows 22 cases where toxin A alone was positive. In 14 of these both dilutions of the Dicks' standard toxin gave negative results.

Among the reasons that have suggested themselves in explanation of the discrepancies shown in Table 10 are the following:

Incorrect standardization of toxins A and B, resulting in the use of toxin A in too low dilution and toxin B in too high dilution.

Difference in the toxins caused by the difference in the organisms used in the production of the toxins.

Difference in the toxins caused by the difference in the mediums employed in toxin production.

The cases are tabulated as indicative of the necessity for careful standardization and as suggestive of further work on toxin production by different strains of hemolytic streptococci of scarlatinal origin and by the same strain on different mediums.

TABLE 10.—*Showing certain reactions produced by different toxins*

Case No.	Test toxins: Dicks' standard, 1:1,000	Test toxins: Dicks' standard, 1:1,750	Test toxins: Toxin A	Test toxins: Toxin B	Heated controls: Dicks' standard, 1:1,000	Heated controls: Dicks' standard, 1:1,750	Heated controls: Toxin A	Heated controls: Toxin B	Remarks	
275		15×18	20×20	19×19		0	12×12	0	See Table 2.	Group 1
74		16×17	15×15	17×20		0	4× 4	0	Do.	
15		16×17	22×20	15×15		4× 4	7× 7	0	See Table 6.	
140		13×20	19×23	20×20		0	4× 6	0	See Table 3.	
322	14×18	17×15	14×14	15×14	5× 5	4× 4	7× 6	3× 3		
291		16×16	21×21	18×18		0	0	0	See Table 2.	
312		13×13	12×12	15×15		0	9× 9	0	See Table 5.	
149		12×17	19×19	15×15		0	15×15	0	See Table 2.	
266 [1]		13×18	15×20	0		7× 7	16×16	0	See Table 5.	Group 2
231		13×13	15×15	7× 7		8× 8	15×15	0	See Table 2.	
278 [1]		13×13	10×10	0		5× 5	13×13	0	See Table 5.	
268		11×15	11×11	0		0	12×12	0	See Table 2.	
46		11×11	13×13	3× 3		15×15	16×16	10×10	See Table 5.	
271		10×10	16×16	0		0	15×15	0	Do.	
241	8× 8	10×10	13×13	0	9× 9	0	14×14	0		
4 [1]		10×10	10×10	0		9× 9	10×10	0	Do.	
2 [1]	10×10	10× 8	18×18	3× 3	16×16	13×13	23×23	6× 6		
6	12×12	10×10	0	14×14	0	0	0	0		Group 3
145		11×11	9× 9	10×10		10×10	5× 5	0	See Table 3	
273		13×13	0	14×14		0	0	0	Do	
14		17×17	0	0		12×12	8× 8	5× 5	See Table 2	Group 4
21		13×13	0	0		0	0	0	Do	
54		10×10	6× 6	0			17×26	18×20	See Table 6.	
283	15×15	0	20×20	0	10×10	0	15×15	0		Group 5
244	15×15	0	18×18	0	0	0	16×16	0		
325	11×11	0	18×19	0	3× 3	0	14×14	3× 3		
250	11×11	0	16×16	0	18×18	0	16×16	0		
287	10×10	0	17×17	0	0	10×10	15×15	5× 5		
106	10×10	0	16×16	0	0	0	14×14	0		
212	10×10	0	12×12	0	0	0	10×10	0		
8	10×10	0	11×11	0	14×14	6× 8	16×16	4× 4		
257		0	20×20	0		0	0	0	See Table 3.	Group 6
306		0	16×16	0		0	0	0	See Table 6.	
245		0	16×16	0		0	0	0	See Table 2.	
240		0	12×13	0		0	7× 7	0	Do	
84		0	11×11	0		0	0	0	See Table 6.	
66		0	11×11	0		0	0	0	Do.	
169		0	11×11	0		0	0	0		
41	0	0	10×10	0		0	0	0	Do.	
195 [1]		7× 7	10×10	0		4× 4	8× 8	2× 5	See Table 3.	
225 [1]	0	0	18×18	0	0	0	0	0		
209	0	0	14×14	0	0	0	0	0		
173	0	0	14×14	0	0	0	7× 7	0		
309 [1]	0	0	13×13	0	0	0	0	0		
194	0	0	12×12	0	0	0	7× 7	0		
172	0	0	12×12	0	0	0	0	0		
295	4× 4	5× 5	12×12	0	0	4× 4	9× 9	0		
228 [1]	0	0	11×11	0			0	0		
238	0	0	11×11	0	0	0	8× 7	0		
117	8× 8	0	10×10	0		0	5× 5	0		
222	0	0	10×10	0	0	0	5× 5	0		
328 [1]	0	0	10×10	0			0	4× 4		
16	0	0	9×10	0	3× 3	0	5× 5	0		

[1] History of scarlet fever prior to admission to the school.

With the exception of cases 241, 6, and 2 (see Table 10), there was no disagreement in the results of the original and final tests with the Dicks' standard toxin in the 1:1,750 dilution among those boys who had not received immunizing doses of toxin and those who had not had scarlet fever.

The results of the original tests on these three exceptions are given below in Table 11.

TABLE 11.—*Showing original test reactions in three cases in which later tests gave different results (see Table 10 for retests)*

Case No.	Test toxin, dilution 1:1,750	Heated control	Medium control
241	0	0	0
8	5×6	0	5×5
2	5×6	7×10	8×8

It will be noted that 12 boys whose test reactions are listed in Tables 2, 3, and 10 gave a history of having had scarlet fever at some time prior to entering the school. A small number, including cases 65 and 263 (see Tables 2 and 3), described the attacks as moderately severe and stated that desquamation occurred. In the majority of cases no account of the illness reported as scarlet fever could be elicited.

In addition to the cases already noted, 20 boys giving negative reactions to the Dicks' standard toxin gave histories of having had scarlet fever. Eleven of these gave pseudo reactions to toxin A.

CONCLUSIONS

(1) Toxin containing 0.5 per cent phenol was found to be as effective in producing immunity as a toxin to which no preservative had been added, when judged by skin tests made three weeks after the last immunizing dose.

(2) The necessity for further work on methods of toxin production and standardization is indicated.

A FURTHER REPORT ON FOOT DEFECTIVENESS IN SCHOOL CHILDREN

A preliminary report on foot defectiveness observed in 356 New York City public-school children by Dr. Maurice J. Lewi was published in the Public Health Reports for November 4, 1921. Of the children examined, 6 per cent of the boys and 13 per cent of the girls had flat foot.

Much has been written regarding the posture of the school child, and yet the average school medical inspector and school nurse seem to have been given very incomplete information regarding the underlying causative factors of faulty posture. Also, a satisfactory practical standard of classification and comparison is yet to be devised. Further investigation is required on this problem.

Postural deformity in the minds of many persons is largely attributable to the action of gravity. Since this action affects everyone, however, it alone can not account for the occurrence of deformity in an otherwise normal person. Studies by Bankart,[1] Sherrington, and others, indicate that postural deformity is the result of faulty position and a deformity resulting therefrom due to default of the

[1] Postural or so-called Static Deformities. By A. S. B. Bankart. Br. Med. Jour., Apr. 23, 1921.

normal mechanism for counteracting the influence of gravity and maintaining the body in an upright position. This mechanism is a nervous mechanism; for the position of the body is maintained by continuous reflex muscular activity.[2] There is evidence that different parts of the muscle fibers are concerned in phasic and tonic muscle activity, respectively, each having individual nerve supplies, and that the sympathetic activity probably is concerned in tonic or postural contractions.

The chief characteristics of postural activity are defined by Sherrington as—

(*a*) The low degree of tension that usually develops;
(*b*) The long periods for which it can be maintained without fatigue;
(*c*) The relative ease with which it is interrupted by reflex inhibition;
(*d*) The "lengthening" and "shortening" reaction obtained from muscles exhibiting postural contraction, i. e., the property which a skeletal muscle has of adapting itself to different lengths without change in tension.

The body is maintained in the erect position by reason of reciprocal innervation of antagonistic muscles. Normally, change in position is accompanied by a finely balanced adjustment, lengthening and shortening opposing muscles without undue tension. In paralysis the break in the arc of reciprocal innervation is caused by an organic lesion, whereas in simple postural cases it is functional and may be induced by many factors.

A very high percentage of postural defect has been observed among school children. An analysis of the tracings of the standing positions of 746 Harvard freshmen, reported by Lee,[3] showed that 80 per cent of them habitually assumed a standing position that was unsatisfactory, and in 25 per cent the method of standing was distinctly unsatisfactory. That is, they had poor use of the feet. It is obvious that the development of most of the cases of foot defect could be prevented by adequate attention during childhood.

Postural activity is not of late development, but is acquired early in life. Bankart called attention to the position assumed by the child just learning to stand. The feet are flattened and inverted by the body weight, not because the muscles are weak, but because postural activity is not yet developed. When he learns to walk, postural activity becomes established and the feet are adducted and inverted. The tendency to passive abduction and eversion, characteristics of flat foot, is resisted by reflex tonic muscular activity. In other words, according to Bankart, flat foot is either caused or accompanied by deficient postural activity which appears to be modified by mental fatigue, inertia, temperament, anemia, consti-

[2] Sherrington: Brain, 1915, Vol. XXXVIII, p. 19.
[3] Bodily Mechanics in Harvard Freshmen. By Roger I. Lee, Wm. H. Greer, and Lloyd T. Brown. Amer. Phys. Ed. Rev., Vol. XXV, No. 8, November, 1920.

pation, adenoids, and the general state of health. The tendency to flat foot should be resisted by relieving the postural muscles from strain, reestablishing the postural reflex, correcting hampering physical defects that lower vitality, and improving the physical and mental health.

It is important that parents and responsible official agencies should cooperate for the discovery of existing or impending foot defects among school children with a view to their correction and prevention. This is quite clearly shown in a report by Doctor Lewi on the results of a more recent foot survey made by the Foot Clinics of New York, of the pupils attending the Bryant High School, Long Island City, New York. Each pupil was examined on the basis of the following queries, which appeared on the record forms:

RECORD OF THE FIRST INSTITUTE OF PODIATRY FOR THE EXAMINATION OF THE FEET AND CARRIAGE OF SCHOOL CHILDREN

Date .... School .... Age ....
Name .... Address ....
Race .... Nationality ....
Sex: M .... F ....

Student complains of—

Pain in feet or legs when walking ....
State exact location of pain ....
Fatigues easily when walking ....

EXAMINATION

Mode of walking	Fit of shoes	Superficial defects
Toes out........	Short........	Corns........
Toes in........	Long........	Callosities........
Correct........	Narrow........	Verruca........
	Wide........	Abnormal nails........
Carriage	Correct........	Skin lesions........
		Hyperidrosis........
Good........	*Style of shoes*	Bromidrosis........
Fair........		
Poor........	Pointed........	NOTE—State the location of the first four defects on the foot Use abbreviations.
	Semipointed........	
	Orthopedic........	
	High heel........	
	Fit of socks	
	Short........	
	Long........	
	Correct........	

DEFORMITIES AND MECHANICAL DISTURBANCES

	Recommendations
Strained foot........	....
Weak foot........	....
Acquired flat foot........	....
Weak ankles........	....
Shaffer's foot........	....
Club foot (type)........	....
Restriction of flexion........	....
Extension........	....
Inversion........	....
Eversion........	....
Functionally impaired metatarsal arch........	....
Metatarsalgia........	....
Morton's toe........	....
Hallux valgus........	....
Hallux rigidus........	....
Hammer toe........	....
	Remarks
NOTE.—State whether condition is bilatera lor unilateral and, if the latter, state which foot.	....
	....

The following data were collected:

Foot defects among Long Island City high-school children

Condition	Percentage			Number		
	Both sexes	Boys	Girls	Both sexes	Boys	Girls
MODE OF WALKING						
Total observed				1,505	551	954
Toes in	2.86	4.17	2 10	43	23	20
Toes out	49 97	51 72	48 95	752	285	467
Correct	47.18	44.10	48 95	710	243	467
FIT OF SHOES [1]						
Total observed				1,505	551	954
Short	44 45	52 81	39 62	669	291	378
Long	2 79	1.63	3.46	42	9	33
Narrow	23.99	21 42	25 47	361	118	243
Wide	3.46	1.63	4 51	52	9	43
Correct	34.55	31 40	36.37	520	173	347
STYLE OF SHOES [2]						
Total observed				1,502	548	954
Pointed	30 69	14.78	39.83	461	81	380
Semipointed	45.41	47.63	44.13	682	261	421
Orthopedic	22 90	37.59	14.47	344	206	138
High heel	2.60		4.09	39		39
SOCKS						
Total observed				1,485	550	935
Short	42 76	59 09	33.16	635	325	310
Long	1.01	.91	1 07	15	5	10
Correct	56 23	40 00	65 78	835	220	615
CARRIAGE						
Total observed				1,273	333	940
Good	44.62	53.45	41.49	568	178	390
Fair	40 93	36.94	42 34	521	123	398
Poor	14.45	9.61	16.17	184	32	152
Total observed				1,505	551	954
Weak foot	76.68	73.14	78 72	1,154	403	751
Flat foot	1.13	2.36	.42	17	13	4
Strained foot	1.06	2 00	.52	16	11	5
Hallux valgus	1.93	.91	2.52	29	5	24
Hammertoe	1.00	2.36	.21	15	13	2
Shaffer's foot	.47	.73	.31	7	4	3
Clubfoot	.07		.10	1		1
Shortened leg	.07	.18		1	1	
Bromidrosis	2.52	6 90		38	38	
Callouses	10.90	10.89	10.90	164	60	104
Corns	23.06	23.77	22.64	347	131	216
Hyperidrosis	16.94		26.73	255		255
Nails	13.02	11.80	13.73	196	65	131
Metatarsalgia	2.26	3.63	1.47	34	20	14
Verruca	.20	.36	.10	3	2	1

[1] Inasmuch as the same shoe might be long and narrow or short and narrow, etc., the percentages do not add up to 100.

[2] The same shoe might be both pointed or semipointed and high heeled; therefore, the percentages do not add up to 100.

On reference to the table it will be observed that 1,154 children, 403 boys and 751 girls, or 73.14 per cent of the former and 78.72 per cent of the latter, were found to have "weak foot."

This condition is defined as a foot that flattens out on weight bearing, being the stage preceding acquired flat foot. Weak foot can be corrected in almost every instance; but when neglected, deformity will follow. "Children and adolescents afflicted with weak foot need the care of the specialist much more than those afflicted with acquired flat foot in order to prevent them from falling into the latter group." This being the case, it is highly important that the routine physical inspection of school children should include examinations for foot defects.

"CLEAN-UP" TOWN CONTEST IN TEXAS

The State Board of Health of Texas has designated the week of April 5–11 as State-wide "clean-up" week, and, in keeping with the program, the Hill County Federation of Women's Clubs has sponsored a "cleanest-town" contest for Hill County for that week. The purpose is to arouse enthusiasm and create a friendly rivalry among the towns of the county in an intensive "clean-up" campaign. Similar campaigns in the past two years, conducted by the federation in cooperation with civic organizations, business men's clubs, Boy Scout organizations, and the school children, have proved very successful. Public markets, dairies, and slaughterhouses were inspected and recommendations for improvements were made where unsatisfactory sanitary conditions were found. The Boy Scouts and the school children took an active part in making a thorough clean-up of rubbish.

The State board of health cooperates in the work and furnishes inspectors free of charge to grade the towns at the end of the contest.

DIGEST OF CURRENT PUBLIC HEALTH COURT DECISIONS

Typhoid fever held compensable under workmen's compensation act.—(Maine Supreme Judicial Court.) Typhoid fever, contracted by an employee of the State highway commission from drinking polluted water furnished him by the commission while in its employ, is a personal injury by accident within the terms of the Maine workmen's compensation act, and therefore compensable. (Brodin's Case, 126 Atl. 829.)

Massachusetts filled-milk act construed.—(United States Circuit Court of Appeals, First Circuit.) The Massachusetts so-called filled-milk act does not proscribe the addition of egg yolk, but of fat or oil, as such, other than milk fat, to any milk, cream, or skimmed

milk for purposes of sale or exchange. The act does not prohibit the manufacture and sale of "Carolene," a compound of skimmed milk and egg yolk subjected to partial evaporation and containing about one-tenth of 1 per cent of fat derived from the egg yolk. (Mahoney et al. *v.* Carolene Products Co., 2 F. (2d) 366.)

Village board of health milk ordinance held valid and violation thereof restrained.—(New York Supreme Court.) A village board of health milk ordinance, which, among other things, designates the various grades which may be sold and the requirements for each grade, and which requires a permit to sell at retail, requires the bottling of all milk, and requires that certified and raw milk of all grades shall come from tuberculin-tested cows, is valid and the village is entitled to an injunction to restrain its violation. (Village of Herkimer *v.* Potter, 207 N. Y. S. 35.)

Right to compel issuance of permit by city board of health denied.—(New Jersey Supreme Court.) A writ of mandamus, to compel a city board of health and city health officer to issue a permit to engage in the business of preparing live fowl for sale or selling live fowl or slaughtering poultry upon the payment of the required fee, was denied where a city ordinance provided that "such permit *may* be issued" by the board of health, because such board had a discretion in the matter of issuing or refusing permits. (Doben *v.* Board of Health of City of Paterson et al., 127 Atl. 38.)

Piggery held not to be a public nuisance.—(Michigan Supreme Court.) A piggery, where garbage collected from the city of Kalamazoo was disposed of by feeding to hogs, was held not to be a public nuisance, even though there were offensive odors from it, particularly in hot weather, where it was quite isolated and passers-by on the highway could not see it and where there were only a very few houses within half a mile of it.

The statutory authority of a township board to assign places for conducting offensive trades is not ground for injunctive relief against a piggery not on an appointed place where the board has taken no action to assign places for conducting piggeries. (Township of Kalamazoo et al. *v.* Kalamazoo Garbage Co., 200 N. W. 953.)

DEATHS DURING WEEK ENDED MARCH 14, 1925

Summary of information received by telegraph from industrial insurance companies for week ended March 14, 1925, and corresponding week of 1924. (From the Weekly Health Index, March 17, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended Mar. 14, 1925	Corresponding week, 1924
Policies in force	58, 976, 770	55, 275, 589
Number of death claims	12, 722	11, 662
Death claims per 1,000 policies in force, annual rate	11. 2	11. 0

Deaths from all causes in certain large cities of the United States during the week ended March 14, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, March 17, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Mar. 14, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Mar. 14, 1925 [2]
	Total deaths	Death rate [1]		Week ended Mar. 14, 1925	Corresponding week, 1924	
Total (64 cities)	7,865	14.9	[3] 14.4	955	[3] 964	
Akron	62			10	6	110
Albany [4]	40	17.4	17.6	6	2	133
Atlanta	79	17.7	20.6	8	16	
Baltimore [4]	260	17.0	15.3	26	28	76
Birmingham	85	21.5	17.4	9	17	
Boston	259	17.2	15.5	29	30	77
Bridgeport	41			5	8	79
Buffalo	155	14.6	12.4	26	14	106
Cambridge	26	12.1	14.9	3	3	52
Camden	39	15.8	16.1	6	1	98
Chicago [4]	816	14.2	12.3	116	116	103
Cincinnati	127	16.2	16.9	12	21	71
Cleveland	226	12.6	11.9	40	43	99
Columbus	93	17.7	15.6	8	5	75
Dallas	43	11.6	13.0	8	12	
Denver	88			4	13	
Des Moines	38	13.3	12.6	5	5	86
Detroit	299			57	52	96
Duluth	26	12.3	10.1	3	4	63
Erie	20			9	5	176
Fall River [4]	40	17.2	17.2	12	11	173
Flint	18			7	9	115
Fort Worth	33	11.3	10.2	3	2	
Grand Rapids	36	12.5	10.5	1	5	16
Houston	48			8	3	
Indianapolis	122	17.7	15.3	15	13	103
Jacksonville, Fla	35	17.4	20.4	4	6	89
Jersey City	75	12.4	16.5	5	12	35
Kansas City, Kans	35	14.7	14.1	6	4	127
Kansas City, Mo	140	19.9	14.1	24	15	
Los Angeles	230			21	22	58
Louisville	93	18.7	14.9	8	7	70
Lowell	43	19.3	15.3	7	7	122
Lynn	20	10.0	10.6	1	5	27
Memphis	69	20.6	18.8	7	13	
Milwaukee	113	11.7	12.2	16	23	73
Minneapolis	113	13.8	10.7	20	7	107
Nashville [4]	68	28.5	27.5	9	7	
New Bedford	40	15.4	13.0	8	8	133
New Haven	40	11.7	18.7	5	6	65
New Orleans	179	22.5	21.0	20	14	
New York	1,608	13.7	14.0	176	199	70
Bronx Borough	193	11.2	12.8	17	22	59
Brooklyn Borough	524	12.2	12.8	57	68	60
Manhattan Borough	704	16.3	16.6	80	97	80
Queens Borough	133	12.1	10.1	18	9	89
Richmond Borough	54	21.0	14.0	4	3	72
Newark, N. J	108	12.4	12.9	6	9	27
Norfolk	39	12.0	12.1	7	3	124
Oakland	60	12.3	13.9	9	6	105
Oklahoma City	28	13.7	9.5	3	1	
Omaha	48	11.8	14.0	5	8	48
Paterson	37	13.6	11.1	7	3	117
Philadelphia	613	16.1	14.1	70	76	88
Pittsburgh	306	25.3	21.3	51	34	179
Portland, Oreg	64	11.8	12.6	4	6	41
Providence	64	13.6	19.3	14	13	112
Richmond	56	15.7	11.9	5	6	61
Rochester	72	11.3		7		55
St. Louis	259	16.4	15.8	20	21	
St Paul	55	11.7	14.5	5	3	43
Salt Lake City [4]	34	13.5	15.8	4	3	63
San Antonio	63	16.6	17.7	6	15	

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 63 cities.
[4] Deaths for week ended Friday, March 13, 1925.

Deaths from all causes in certain large cities of the United States during the week ended March 14, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, March 17, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Mar. 14, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Mar. 14, 1925
	Total deaths	Death rate		Week ended Mar. 14, 1925	Corresponding week, 1924	
San Francisco	147	13.7	14.3	10	16	58
Schenectady	28	14.3	15.1	4	1	113
Seattle	72			3	4	31
Somerville	34	17.4	10.9	4	1	107
Spokane	36			5	4	109
Springfield, Mass	37	12.6	16.5	3	4	45
Syracuse	45	12.2	16.1	11	7	138
Tacoma	13	6.5	15.7	0	4	0
Toledo	84	15.2	12.5	11	12	100
Trenton	42	16.6	20.9	6	8	97
Utica	28	13.6	17.3	5	2	103
Washington, D. C.	136	14.2	16.8	12	6	67
Waterbury	24			6	5	133
Wilmington, Del	34	14.5	12.2	4	3	91
Worcester	67	17.6	12.5	4	4	46
Yonkers	20	9.3	10.5	3	3	66
Youngstown	30	9.8	12.8	3	5	38

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended March 21, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	3
Chicken pox	67
Diphtheria	12
Dysentery	2
Influenza	657
Lethargic encephalitis	1
Malaria	17
Measles	10
Mumps	60
Ophthalmia neonatorum	1
Pellagra	10
Pneumonia	236
Poliomyelitis	2
Scarlet fever	32
Smallpox	169
Tetanus	4
Tuberculosis	104
Typhoid fever	12
Whooping cough	20

ARIZONA

	Cases
Cerebrospinal meningitis	1
Chicken pox	10
Diphtheria	7
Influenza	150
Leprosy	1
Measles	28
Mumps	15
Scarlet fever	11
Trachoma	1
Tuberculosis	82
Whooping cough	8

ARKANSAS

	Cases
Cerebrospinal meningitis	1
Chicken pox	34
Diphtheria	3
Hookworm disease	2
Influenza	460
Malaria	33
Measles	40

ARKANSAS—continued

	Cases
Mumps	44
Pellagra	18
Scarlet fever	10
Smallpox	21
Trachoma	6
Tuberculosis	13
Typhoid fever	13
Whooping cough	33

CALIFORNIA

	Cases
Cerebrospinal meningitis:	
Los Angeles	1
Oakland	1
Diphtheria	143
Influenza	156
Jaundice (epidemic)—San Francisco	3
Lethargic encephalitis	
San Diego	1
San Francisco	1
Measles	114
Poliomyelitis:	
Alameda	1
Oakland	1
Scarlet fever	148
Smallpox	
Huntington Park	8
Los Angeles	34
Los Angeles County	15
Oakland	10
Ojai	12
San Diego	17
San Francisco	15
San Jose	12
Scattering	40
Typhoid fever	6

COLORADO

(Exclusive of Denver)

	Cases
Chicken pox	8
Diphtheria	12
Influenza	13

COLORADO—continued

	Cases
Measles	1
Mumps	10
Pneumonia	3
Scarlet fever	12
Smallpox	1
Tuberculosis	54
Typhoid fever	3
Whooping cough	4

CONNECTICUT

Cerebrospinal meningitis	2
Chicken pox	46
Diphtheria	49
Dysentery (bacillary)	1
German measles	33
Influenza	21
Measles	167
Mumps	22
Pneumonia (all forms)	99
Scarlet fever	138
Septic sore throat	5
Tuberculosis (all forms)	37
Whooping cough	54

DELAWARE

Chicken pox	1
Diphtheria	2
Measles	3
Mumps	4
Pneumonia	4
Scarlet fever	4
Tuberculosis	2
Whooping cough	1

DISTRICT OF COLUMBIA

Chicken pox	10
Diphtheria	14
Influenza	2
Measles	38
Pneumonia	52
Poliomyelitis	1
Scarlet fever	27
Tuberculosis	25
Typhoid fever	3
Whooping cough	18

FLORIDA

Chicken pox	8
Dengue	1
Diphtheria	7
Influenza	53
Lethargic encephalitis	3
Malaria	14
Measles	4
Mumps	58
Pneumonia	106
Rabies	1
Scarlet fever	8
Smallpox	4
Tetanus	3
Tuberculosis	79
Typhoid fever	9
Whooping cough	14

GEORGIA

Cerebrospinal meningitis	1
Chicken pox	46
Diphtheria	16
Dysentery (amebic)	4
Hookworm disease	6

GEORGIA—continued

	Cases
Influenza	1,202
Lethargic encephalitis	1
Malaria	32
Measles	42
Mumps	111
Pellagra	7
Pneumonia	176
Scarlet fever	12
Septic sore throat	19
Smallpox	18
Tetanus	1
Trachoma	9
Tuberculosis	23
Typhoid fever	7
Whooping cough	66

ILLINOIS

Cerebrospinal meningitis:	
Cook County	2
Sangamon County	1
Diphtheria:	
Cook County	70
Scattering	40
Influenza	382
Lethargic encephalitis—Cook County	3
Measles	1,075
Pneumonia	448
Scarlet fever:	
Cook County	349
Kane County	14
Kankakee County	15
Knox County	12
Lake County	9
Marion County	18
Peoria County	10
St. Clair County	20
Will County	9
Scattering	93
Smallpox:	
St. Clair County	15
Scattering	24
Tuberculosis	238
Typhoid fever	5
Whooping cough	267

INDIANA

Chicken pox	86
Diphtheria	26
Influenza	155
Measles	97
Mumps	10
Pneumonia	27
Poliomyelitis—Cass County	1
Scarlet fever:	
Cass County	10
Delaware County	21
Elkhart County	13
Huntington County	24
Lake County	11
St. Joseph County	75
Vigo County	15
Scattering	90
Smallpox:	
Cass County	16
Marion County	12
Vigo County	8
Scattering	31

INDIANA—continued

	Cases
Tuberculosis	25
Typhoid fever	5
Whooping cough	15

IOWA

Diphtheria	14
Scarlet fever	24
Smallpox	17
Typhoid fever	1

KANSAS

Chicken pox	131
Diphtheria	36
German measles	6
Influenza	180
Measles	4
Mumps	423
Pneumonia	78
Poliomyelitis	1
Scarlet fever	143
Smallpox	9
Tetanus	1
Tuberculosis	95
Typhoid fever	2
Whooping cough	43

LOUISIANA

Diphtheria	9
Hookworm disease	6
Influenza	272
Malaria	5
Pneumonia	56
Scarlet fever	19
Smallpox	28
Tuberculosis	43
Typhoid fever	11
Whooping cough	8

MAINE

Chicken pox	43
Conjunctivitis	1
Diphtheria	4
German measles	4
Influenza	51
Measles	14
Mumps	215
Pneumonia	18
Scarlet fever	32
Tuberculosis	5
Typhoid fever	3
Vincent's angina	2
Whooping cough	7

MARYLAND [1]

Chicken pox	82
Diphtheria	41
Dysentery	4
German measles	8
Influenza	64
Lethargic encephalitis	1
Measles	47
Mumps	68
Pneumonia (all forms)	172
Scarlet fever	71
Septic sore throat	4
Smallpox	1
Tuberculosis	77

[1] Week ended Friday.

MARYLAND—continued

	Cases
Typhoid fever	5
Vincent's angina	1
Whooping cough	116

MASSACHUSETTS

Anthrax	1
Cerebrospinal meningitis	1
Chicken pox	170
Conjunctivitis (suppurative)	6
Diphtheria	73
German measles	233
Influenza	143
Lethargic encephalitis	2
Measles	597
Mumps	100
Ophthalmia neonatorum	20
Pneumonia (lobar)	186
Scarlet fever	308
Septic sore throat	5
Trachoma	4
Trichinosis	1
Tuberculosis (all forms)	162
Typhoid fever	11
Whooping cough	157

MICHIGAN

Diphtheria	66
Measles	168
Pneumonia	172
Scarlet fever	382
Smallpox	25
Tuberculosis	218
Typhoid fever	5
Whooping cough	90

MINNESOTA

Chicken pox	97
Diphtheria	48
Influenza	3
Lethargic encephalitis	1
Measles	35
Pneumonia	9
Scarlet fever	240
Smallpox	31
Tuberculosis	87
Typhoid fever	4
Whooping cough	19

MISSISSIPPI

Diphtheria	10
Influenza	136
Poliomyelitis	1
Scarlet fever	2
Smallpox	15
Typhoid fever	6

MISSOURI

(Exclusive of Kansas City)

Chicken pox	66
Diphtheria	89
Influenza	101
Measles	17
Mumps	164
Ophthalmia neonatorum	1
Pneumonia	39
Scarlet fever	276

MISSOURI—continued

	Cases
Smallpox	27
Tetanus	1
Trachoma	3
Tuberculosis	42
Typhoid fever	3
Whooping cough	33

MONTANA

Chicken pox	22
Diphtheria	3
German measles	83
Measles	23
Mumps	39
Scarlet fever	32
Smallpox	11
Tuberculosis	2
Whooping cough	8

NEBRASKA

Cerebrospinal meningitis	1
Chicken pox	17
Diphtheria	4
Influenza	27
Measles	1
Mumps	24
Pneumonia	1
Poliomyelitis	1
Scarlet fever	22
Smallpox	26
Tuberculosis	1
Whooping cough	3

NEW JERSEY

Cerebrospinal meningitis	2
Chicken pox	125
Diphtheria	102
Influenza	44
Measles	224
Pneumonia	151
Scarlet fever	320
Smallpox	1
Typhoid fever	10
Whooping cough	295

NEW MEXICO

Chicken pox	14
Conjunctivitis	1
Diphtheria	3
Influenza	7
Lethargic encephalitis	1
Measles	23
Mumps	10
Pneumonia	6
Scarlet fever	13
Smallpox	1
Tuberculosis	40
Typhoid fever	1
Whooping cough	10

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	3
Diphtheria	93
Influenza	213
Lethargic encephalitis	1
Measles	506
Pneumonia	457

NEW YORK—continued

	Cases
Poliomyelitis	2
Scarlet fever	344
Smallpox	5
Typhoid fever	14
Whooping cough	201

NORTH CAROLINA

Chicken pox	123
Diphtheria	29
Measles	58
Scarlet fever	21
Septic sore throat	2
Smallpox	67
Typhoid fever	1
Whooping cough	135

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Cerebrospinal meningitis—Haskell County	1
Chicken pox	17
Diphtheria	8
Influenza	288
Mumps	23
Pneumonia	111
Scarlet fever	23
Smallpox	
Custer County	23
Scattering	10
Typhoid fever	7
Whooping cough	20

OREGON

Chicken pox	16
Diphtheria	
Portland	11
Scattering	9
Influenza	88
Measles	4
Mumps	31
Ophthalmia neonatorum	1
Pneumonia	15
Scarlet fever	18
Smallpox	
Portland	11
Scattering	12
Tuberculosis	18
Typhoid fever	4
Whooping cough	24

SOUTH DAKOTA

Chicken pox	6
Diphtheria	10
Measles	5
Pneumonia	10
Scarlet fever	48
Smallpox	14
Tuberculosis	1
Typhoid fever	5
Whooping cough	1

TEXAS

Cerebrospinal meningitis	2
Chicken pox	55
Diphtheria	37
Dysentery (epidemic)	4
Influenza	406
Measles	96
Mumps	89

TEXAS—continued

	Cases
Pellagra	3
Pneumonia	88
Rabies in man	1
Scarlet fever	16
Smallpox	94
Tetanus	1
Tuberculosis	10
Typhoid fever	8
Whooping cough	68

VERMONT

Chicken pox	27
Diphtheria	3
Measles	28
Mumps	66
Scarlet fever	19
Whooping cough	12

WASHINGTON

Chicken pox	112
Diphtheria	45
German measles	90
Measles	3
Mumps	185
Pneumonia	1
Poliomyelitis—Aberdeen	1
Scarlet fever	44
Smallpox	52
Trichinosis	8
Tuberculosis	29
Typhoid fever	4
Whooping cough	68

WEST VIRGINIA

Diphtheria	9
Scarlet fever	14
Smallpox	11
Typhoid fever	5

WISCONSIN

	Cases
Milwaukee:	
Chicken pox	51
Diphtheria	11
German measles	659
Influenza	1
Measles	421
Mumps	127
Ophthalmia neonatorum	1
Pneumonia	12
Scarlet fever	13
Smallpox	15
Trachoma	1
Tuberculosis	11
Whooping cough	18
Scattering:	
Chicken pox	203
Diphtheria	27
German measles	96
Influenza	110
Measles	320
Mumps	353
Pneumonia	44
Scarlet fever	124
Smallpox	37
Tuberculosis	16
Typhoid fever	2
Whooping cough	73

WYOMING

Chicken pox	17
Diphtheria	1
Influenza	1
Measles	3
Mumps	12
Scarlet fever	11
Trachoma	3
Tuberculosis	2
Typhoid fever	6

Reports for Week Ended March 14, 1925

DISTRICT OF COLUMBIA

	Cases
Cerebrospinal meningitis	1
Chicken pox	20
Diphtheria	7
Influenza	2
Lethargic encephalitis	1
Measles	22
Pneumonia	38
Scarlet fever	42
Smallpox	1
Tuberculosis	16
Typhoid fever	1
Whooping cough	20

FLORIDA

Diphtheria	9
Influenza	10
Malaria	5
Pneumonia	7

FLORIDA—continued

	Cases
Scarlet fever	3
Smallpox	4
Typhoid fever	12

NORTH DAKOTA

Cerebrospinal meningitis	1
Chicken pox	33
Diphtheria	5
German measles	2
Measles	2
Mumps	21
Pneumonia	10
Scarlet fever	90
Smallpox	10
Trachoma	1
Tuberculosis	2
Whooping cough	5

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
December, 1924										
California	8	952	91	4	185	5	36	737	473	103
January, 1925										
Florida		34	113	28	12	1	1	15	8	41
Idaho		23	5					31		7
Louisiana	0	94	279	18	9	5	2	62	110	75
Maryland	2	164	401	1	262	0	1	445		27
Minnesota	1	395	7		134		1	998	201	29
Missouri	2	325	353	12	63	0	0	1,557	94	9
New Jersey	4	410	157	0	614		2	1,281	19	26
New York	16	1,220	791	3	1,577		8	2,870	54	147
Oklahoma	6	104	2,648	42	42	11	3	155	179	50
Rhode Island	0	73	6	7		0	0	140		1
West Virginia	1	92	307		149		1	133	123	92
Wisconsin	6	165	206	0	1,886	0	6	661	217	8

RECIPROCAL NOTIFICATIONS, FEBRUARY, 1925

Notifications regarding communicable diseases sent during the month of February, 1925, to other State health departments by departments of health of certain States

Referred by—	Cerebrospinal meningitis	Diphtheria	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever
Illinois					4	
Minnesota	1		3	1	39	1
New York		1	6			1
Ohio						2

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended March 7, 1925:

Los Angeles, Calif.

Week ended Mar. 7, 1925:
- Number of rats examined 3,719
- Number of rats found to be plague infected 12
- Number of squirrels examined 861
- Number of squirrels found to be plague infected 1

Totals to Mar. 7, 1925:
- Number of rats examined 59,815
- Number of rats found to be plague infected 126
- Number of squirrels examined 3,870
- Number of squirrels found to be plague infected 3

Oakland, Calif.

Week ended Mar. 7, 1925:
- Number of rats examined 2,871
- Number of rats found to be plague infected 2

Totals to Mar. 7, 1925:	
Number of rats examined	20, 821
Number of rats found to be plague infected	21

New Orleans, La.

Week ended Mar. 7, 1925:	
Number of vessels inspected	446
Number of inspections made	1, 110
Number of vessels fumigated with cyanide gas	35
Number of rodents examined for plague	4, 613
Number of rodents found to be plague infected	0
Totals to Mar. 7, 1925:	
Number of rodents examined for plague	51, 023
Number of rodents found to be plague infected	12

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended March 7, 1925, 35 States reported 1,455 cases of diphtheria. For the week ended March 8, 1924, the same States reported 1,848 cases of this disease. One hundred and five cities, situated in all parts of the country and having an aggregate population of approximately 28,900,000, reported 897 cases of diphtheria for the week ended March 7, 1925. Last year for the corresponding week they reported 1,028 cases. The estimated expectancy for these cities was 1,036 cases.

Measles.—Twenty-six States reported 4,267 cases of measles for the week ended March 7, 1925, and 18,351 cases of this disease for the week ended March 8, 1924. One hundred and five cities reported 2,316 cases of measles for the week this year, and 7,110 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: Thirty-five States—this year, 4,528 cases; last year, 4,448 cases; 105 cities—this year, 2,191 cases; last year, 1,934 cases; estimated expectancy, 1,073 cases.

Smallpox.—For the week ended March 7, 1925, 35 States reported 984 cases of smallpox. Last year for the corresponding week they reported 1,460 cases. One hundred and five cities reported smallpox for the week as follows: 1925, 345 cases; 1924, 488 cases; estimated expectancy, 105 cases. These cities reported 13 deaths from smallpox for the week this year, of which 4 occurred in Houston, Tex., 3 in Detroit, Mich., and 3 in Minneapolis, Minn.

Typhoid fever.—Two hundred and one cases of typhoid fever were reported for the week ended March 7, 1925, by 34 States. For the corresponding week of 1924 the same States reported 227 cases. One hundred and five cities reported 62 cases of typhoid fever for the week this year and 46 cases for the week last year. The estimated expectancy for these cities was 43 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 105 cities as follows: 1925, 1,278 deaths; 1924, 1,336 deaths.

City reports for week ended March 7, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	8	2	2	0	0	0	47	0
New Hampshire									
Concord	22,408	0	0	0	0	0	0	0	0
Manchester	81,383		3	4		3	0		2
Vermont:									
Barre	[1] 10,008	1	1	0	0	0	0	11	0
Burlington	23,613	6	0	1	0	0	1	11	1
Massachusetts:									
Boston	770,400	52	62	55	16	5	225	9	41
Fall River	120,912	1	5	2	1	0	0	0	6
Springfield	144,227	2	4	2	1	1	23	3	2
Worcester	191,927	11	4	4	2	0	3	0	2
Rhode Island:									
Pawtucket	68,799	6	2	2	0	0	2	0	4
Providence	242,378	0	12	8	0	0	2	0	14
Connecticut:									
Bridgeport	[1] 143,555	0	8	7	1	0	0	0	6
Hartford	[1] 138,036	2	9	12	0	0	1	4	13
New Haven	172,967	18	3	0	1	1	8	0	3
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	14	19	4	3	1	134	11	17
New York	5,927,625	160	223	191	109	15	72	21	233
Rochester	317,867	6	8	0	0	0	23	34	8
Syracuse	184,511	7	6	2	1	0	5	15	9
New Jersey:									
Camden	124,157	10	3	2	0	0	18	0	9
Newark	438,699	29	17	6	15	0	56	12	17
Trenton	127,390	1	6	2	4	1	10	0	4
Pennsylvania:									
Philadelphia	1,922,788	61	78	106		9	233	27	79
Pittsburgh	613,442	46	23	15		4	273	18	38
Reading	110,917	11	3	2	0	0	22	23	1
Scranton	140,636	1	4	4	0	0	0	0	7
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	19	10	12		2	0	10	13
Cleveland	888,519	76	30	20	17	7	3	4	22
Columbus	261,082	10	4	2	0	1	1	4	12
Toledo	268,338	15	5	5		3	43	1	8
Indiana:									
Fort Wayne	93,573	6	4	4	0	0	4	0	1
Indianapolis	342,718	15	11	6		3	3	9	29
South Bend	76,709	5	1	1	0	0	9	0	4
Terre Haute	68,939	2	1	0	0	1	0	1	7

[1] Population Jan. 1, 1920.

City reports for week ended March 7, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST NORTH CENTRAL—continued									
Illinois:									
Chicago	2,866,121	94	116	61	33	14	490	17	117
Cicero	55,968	2	1	0	0	0	4	1	2
Springfield	61,833	6	1	0	0	0	1	48	2
Michigan:									
Detroit	995,668	54	58	30	7	6	12	28	45
Flint	117,968	3	6	1	0	0	1	2	3
Grand Rapids	145,947	12	3	1	2	2	31	0	2
Wisconsin:									
Madison	42,519	6	1	0	0	0	2	155	1
Milwaukee	484,595	47	15	15	0	0	487	65	0
Racine	64,393	5	2	1	0	0	16	10	3
Superior	[1] 39,671	7	1	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	10	2	0	0	0	1	0	2
Minneapolis	409,125	83	16	39	0	0	6	5	12
St. Paul	241,891	26	12	13	0	0	18	43	10
Iowa:									
Davenport	61,262	0	1	0	0	-	2	0	-
Des Moines	140,923	0	3	3	0	-	0	0	-
Sioux City	79,662	8	2	0	0	-	1	33	-
Waterloo	39,667	2	0	0	0	-	2	1	-
Missouri:									
Kansas City	351,819	10	10	9	14	15	0	30	19
St. Joseph	78,232	1	2	2	0	0	0	0	4
St. Louis	803,853	31	44	57	0	1	5	10	-
North Dakota:									
Fargo	24,841	0	0	0	0	0	0	0	1
Grand Forks	14,547	2	0	0	0	-	0	0	-
South Dakota:									
Aberdeen	15,829	0	-	0	0	-	1	0	-
Sioux Falls	29,206	1	1	2	0	0	0	0	0
Nebraska:									
Lincoln	58,761	26	1	6	-	1	0	4	2
Omaha	204,382	4	5	9	0	0	0	0	10
Kansas:									
Topeka	52,555	9	2	1	0	0	0	165	3
Wichita	79,261	10	1	4	0	0	0	4	3
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	1	2	3	0	0	3	0	2
Maryland:									
Baltimore	773,580	60	24	15	25	2	7	41	48
Cumberland	32,361	-	1	0	1	0	0	-	0
Frederick	11,301	-	1	0	3	0	2	-	1
District of Columbia:									
Washington	[1] 437,571	30	11	15	-	3	13	-	22
Virginia:									
Lynchburg	30,277	2	1	1	0	0	1	35	2
Norfolk	159,089	23	1	0	0	0	0	111	5
Richmond	181,044	9	2	8	-	3	6	1	6
Roanoke	55,502	3	1	1	0	0	1	5	0
West Virginia:									
Charleston	45,597	0	1	0	0	0	11	0	1
Huntington	57,918	0	1	0	0	-	0	0	-
Wheeling	[1] 56,208	4	1	1	0	0	0	2	2
North Carolina:									
Raleigh	29,171	5	1	0	0	0	3	0	2
Wilmington	35,719	0	0	0	0	0	0	3	3
Winston-Salem	56,230	2	0	1	0	1	1	0	4
South Carolina:									
Charleston	71,245	1	1	1	0	0	0	0	4
Columbia	39,688	0	1	1	0	0	0	4	5
Greenville	25,789	0	1	0	0	1	0	0	3
Georgia:									
Atlanta	222,963	0	2	0	9	3	1	0	12
Brunswick	15,937	-	0	0	6	0	0	-	0
Savannah	89,448	2	1	1	35	11	0	12	6

[1] Population Jan. 1, 1920.

City reports for week ended March 7, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
SOUTH ATLANTIC—con.									
Florida									
St. Petersburg	24,403	0	0	0	0	0	0	0	1
Tampa	56,050	3	2	3		2	0	3	3
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	1	2	0	0	0	3	2
Lexington	43,673	0	0	0	0	0	0	0	1
Louisville	257,671	1	5	1	2	0	1	0	13
Tennessee:									
Memphis	170,067		5	4		5	2		13
Nashville	121,128	0	1	2	0	1	11	2	5
Alabama:									
Birmingham	195,901	6	2	1	9	10	1	3	9
Mobile	63,858	0	1	0	5	2	0	1	5
Montgomery	45,383	3	0	1	3		0	2	
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	9	1	0	0		0	10	
Little Rock	70,916	0	0	0	9	0	2	0	3
Louisiana:									
New Orleans	404,575	8	12	11	51	16	1	0	16
Shreveport	54,590	7		1	0	0	1	0	7
Oklahoma:									
Oklahoma	101,150	0	1	3	15	2	0	3	3
Texas:									
Dallas	177,274	23	4	8	51	7	0	2	5
Galveston	46,877	2	1	1	0	0	0	0	1
Houston	154,970	2	1	7		2	0	1	5
San Antonio	184,727	0	3	3		3	1	1	8
MOUNTAIN									
Montana:									
Billings	16,927	1	0	0	0	0	0	6	3
Great Falls	27,787	2	1	2	0	0	0	2	0
Helena	[1] 12,037	0	0	0	0	0	0	0	1
Missoula	[1] 12,668	0	0	3	0	0	0	1	2
Idaho:									
Boise	22,806	1	0	0	0	0	0	0	0
Colorado:									
Denver	272,031	26	9	4		2	2	117	6
Pueblo	43,519	10	2	0	0	0	0	15	2
New Mexico:									
Albuquerque	16,648	2	2	0		2	0	3	0
Utah:									
Salt Lake City	126,241	20	2	0	0	0	1	49	
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	57	6	8	0		3	49	
Spokane	104,573	14	2	28	0		0	0	
Tacoma	101,731	1	1	0	1	0	0	2	1
Oregon:									
Portland	273,621	7	4	11	0	0	2	3	5
California:									
Los Angeles	666,853	71	33	29	34	4	21	30	27
Sacramento	69,950		1	2		1	1		3
San Francisco	539,038	29	27	14	14	2	12	56	3

[1] Population Jan. 1, 1920.

City reports for week ended March 7, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	1	2	0	0	0	0	0	0	0	2	10
New Hampshire:											
Concord	1	9	0	0	0	0	0	0	0	0	1
Manchester	2	14	0	0	0	0	0	0	0		19
Vermont:											
Barre	1	1	0	0	0	1	0	0	0	0	4
Burlington	1	5	0	0	0	1	0	0	0	1	7
Massachusetts:											
Boston	55	109	0	0	0	16	2	2	1	61	282
Fall River	4	5	0	0	0	3	1	0	0	3	38
Springfield	6	26	0	0	0	2	0	0	0	14	28
Worcester	10	7	0	0	0	2	1	0	0	4	65
Rhode Island											
Pawtucket	1	3	0	0	0	0	0	0	0	0	23
Providence	9	10	0	0	0	2	0	1	0	1	65
Connecticut											
Bridgeport	6	19	0	0	0	1	0	0	1	0	50
Hartford	5	11	0	0	0	0	0	0	0	7	51
New Haven	6	33	0	0	0	0	0	0	0	14	44
MIDDLE ATLANTIC											
New York:											
Buffalo	19	15	0	0	0	11	0	3	1	39	163
New York	187	342	0	0	0	[1] 110	7	13	2	117	1,531
Rochester	12	59	0	0	0	3	1	1	0	5	83
Syracuse	16	3	0	0	0	6	0	0	0	2	55
New Jersey											
Camden	3	19	0	0	1	1	0	0	0	0	38
Newark	24	47	0	0	0	8	0	1	0	77	128
Trenton	4	0	0	0	0	1	0	0	0		44
Pennsylvania:											
Philadelphia	63	157	1	2	0	37	3	1	0	78	498
Pittsburgh	19	81	0	0	0	6	0	0	0	5	167
Reading	2	12	0	0	0	2	0	0	0	4	28
Scranton	4	1	0	0	0	2	0	0	0	6	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	11	18	1	2	0	12	1	1	0	1	135
Cleveland	36	26	1	0	0	17	2	2	0	25	214
Columbus	8	11	1	15	0	3	0	2	0	1	82
Toledo	16	30	4	0	0	7	0	0	0	39	83
Indiana											
Fort Wayne	3	8	1	0	0	0	1	0	0	2	22
Indianapolis	10	3	3	14	0	0	1	0	0	5	118
South Bend	3	8	0	1	0	0	0	0	0	0	16
Terre Haute	3	5	0	6	0	1	0	0	0	0	22
Illinois:											
Chicago	90	304	3	0	0	62	3	3	1	128	818
Cicero	2	5	0	0	0	0	0	0	0	2	6
Springfield	1	4	1	0	0	0	1	1	0	0	20
Michigan.											
Detroit	88	103	4	1	3	23	2		3	43	322
Flint	7	1	1	2	0	2	0	0	0	0	14
Grand Rapids	8	57	1	1	0	2	0	1	0	3	39
Wisconsin:											
Madison	3	6	0	0	0	1	0	0	0	3	6
Milwaukee	36	11	1	12	0	5	1	0	0	41	
Racine	5	1	1	3	0	0	0	1	0	0	12
Superior	2	13	4	0	0	3	0	0	0	0	19
WEST NORTH CENTRAL											
Minnesota:											
Duluth	4	33	1	0	0	0	0	0	0	0	13
Minneapolis	36	61	7	18	3	8	0	0	0	1	127
St. Paul	28	33	8	2	0	7	1	1	0	5	74

[1] Pulmonary tuberculosis only.

City reports for week ended March 7, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL—con.											
Iowa:											
Davenport	3	0	2	1			0	0		0	
Des Moines	9	9	2	2			0	0		0	
Sioux City	2	1	1	0			0	0		0	
Waterloo	3	1	0	5			0	0		2	
Missouri:											
Kansas City	11	118	2	0	0	13	0	0	0	4	125
St. Joseph	2	2	0	0	0	1	0	1	0	0	35
St. Louis	29	115	2	9	0	12	1	1	0	3	248
North Dakota:											
Fargo	1	0	0	0	0	0	0	0	0	0	2
Grand Forks	0	0	0	0			0	0		0	
South Dakota:											
Aberdeen		4		0				0		0	
Sioux Falls	3	0	0	0	0	0	0	0	0	0	2
Nebraska:											
Lincoln	4	0	0	0	0	0	0	0	0	9	20
Omaha	5	3	2	21	0	0	0	0	0	1	55
Kansas:											
Topeka	2	3	0	0	0	1	0	0	0	0	22
Wichita	2	4	3	0	0	3	0	0	0	14	34
SOUTH ATLANTIC											
Delaware:											
Wilmington	2	3	0	0	0	0	0	0	0	3	34
Maryland:											
Baltimore	38	35	1	0	0	23	2	0	0	81	258
Cumberland	1	1	0	0	0	1	0	0	0		10
Frederick	2	0	0	0	0	0	0	0	0		7
District of Columbia:											
Washington	23	29	1	1	0	20	0	1	0	2	179
Virginia:											
Lynchburg	0	2	0	0	0	0	0	0	0	16	12
Norfolk	2	1	1	0	0	7	0	0	0	7	
Richmond	3	4	0	0	0	4	0	0	0	0	61
Roanoke	1	1	1	0	0	1	0	0	0	0	12
West Virginia:											
Charleston	1	0	0	1	0	0	0	0	0	0	17
Huntington	0	1	1	0			0	0		0	
Wheeling	1	3	0	0	0	1	0	0	0	5	27
North Carolina:											
Raleigh	1	0	1	1	0	0	0	0	0	0	11
Wilmington	0	0	0	3	0	0	0	0	0	3	15
Winston-Salem	1	0	1	3	0	1	0	1	0	2	21
South Carolina:											
Charleston	0	0	0	0	0	2	1	1	0	0	28
Columbia	0	1	1	0	0	1	0	0	0	2	27
Greenville	0	0	1	16	0	0	0	0	0	0	10
Georgia:											
Atlanta	5	3	3	0	0	2	0	0	0	0	77
Brunswick	0	0	0	0	0	0	0	0	0		3
Savannah	1	0	0	0	0	5	0	0	0	5	46
Florida:											
St. Petersburg	2	0	1	0	0	0	0	0	0	0	9
Tampa	0	1	0	0	0	0	2	1	0	0	25
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	1	1	0	0	0	0	0	0	0	24
Lexington	0	0	0	0	0	0	0	0	0	0	14
Louisville	4	6	1	1	0	1	0	1	0	0	107
Tennessee:											
Memphis	3	7	1	5	0	3	1	4	0		71
Nashville	2	9	1	4	0	6	1	1	0	0	57
Alabama:											
Birmingham	1	8	0	98	1	9	1	0	0	0	65
Mobile	1	2	1	0	0	2	0	0	0	0	22
Montgomery	0	1	0	6	0	0	0	0	0	0	12

City reports for week ended March 7, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas											
Fort Smith	0	0	0	2			0	0		6	
Little Rock	1	0	0	0	0	4	0	0	0	0	
Louisiana											
New Orleans	4	29	3	1	0	14	2	3	0		146
Shreveport		1		1	0	0		1	0	0	32
Oklahoma:											
Oklahoma	3	5	5	0	0	1	0	0	0	3	27
Texas											
Dallas	1	4	6	1	0	2	0	0	0	5	61
Galveston	1	0	0	2	0	2	1	1	1	0	18
Houston	1	4	1	9	4	4	0	0	0	0	53
San Antonio	1	2	1	0	0	16	0	1	0	0	
MOUNTAIN											
Montana											
Billings	1	2	0	0	0	0	0	0	0	2	8
Great Falls	1	5	1	2	0	0	0	1	0	0	3
Helena	0	0	0	0	0	0	0	0	0	0	10
Missoula	1	1	1	0	0	0	0	0	0	0	6
Idaho											
Boise	1	1	1	1	0	0	0	0	0	0	2
Colorado											
Denver	12	11	3	0	0	15	0	0	0	9	76
Pueblo	2	0	1	0	0	0	0	0	1	0	8
New Mexico:											
Albuquerque	2	0	0	0	0	2	0	0	0	0	7
Utah											
Salt Lake City	3	5	2	0	0	1	0	0	0	9	30
Nevada:											
Reno	0	5	0	2	0	0	0	0	0	0	3
PACIFIC											
Washington											
Seattle	9	14	1	23			0	2		32	
Spokane	4	2	9	1			0	0		5	
Tacoma	2	2	2	1	0	4	0	0	0	0	29
Oregon:											
Portland	6	5	5	7	0	6	0	0	1	3	
California:											
Los Angeles	14	44	2	37	0	32	2	3	0	45	256
Sacramento	1	0	0	0	0	4	0	0	0		21
San Francisco	18	13	4	9	1	11	1	0	0	37	126

City reports for week ended March 7, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	Cases	Deaths
NEW ENGLAND											
Massachusetts											
Boston	1	0	3	0	0	0	0	0	0	0	0
Springfield	0	0	1	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC											
New York:											
New York	4	3	9	3	0	0	1	2	0	1	0
Pennsylvania:											
Philadelphia	0	0	2	3	0	0	0	0	0	0	0
Pittsburgh	1	0	0	0	0	0	0	0	0	0	0
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	1	0	0	0	0	0	0	0	0	0	0
Cleveland	0	0	1	0	0	0	0	0	0	0	0
Indiana											
Fort Wayne	0	0	0	0	0	0	0	1	0	0	0
Illinois											
Chicago	0	0	3	0	0	0	0	0	0	0	0
Michigan											
Detroit	3	0	0	0	0	0	0	1	0	0	0
Wisconsin:											
Milwaukee	0	0	0	0	0	0	1	0	1	0	0
WEST NORTH CENTRAL											
Missouri:											
Kansas City	0	0	0	0	0	0	0	1	0	0	0
St. Joseph	1	0	0	0	0	0	0	0	0	0	0
St. Louis	2	0	0	0	0	0	0	0	0	0	0
SOUTH ATLANTIC											
South Carolina:											
Columbia	0	0	0	0	0	1	0	0	0	0	0
EAST SOUTH CENTRAL											
Alabama											
Birmingham	0	0	0	0	1	0	0	0	0	0	0
WEST SOUTH CENTRAL											
Louisiana:											
New Orleans	1	1	0	0	0	0	0	0	0	0	0
Texas:											
Dallas	0	0	0	0	0	1	0	0	0	0	0
San Antonio	0	2	0	0	0	0	0	0	0	0	0
MOUNTAIN											
Nevada:											
Reno	0	1	0	0	0	0	0	0	0	0	0
PACIFIC											
California:											
Los Angeles	0	0	0	0	2	0	0	1	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended March 7, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, December 28, 1924, to March 7, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Jan. 3	Jan 10	Jan 17	Jan 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7
Total	163	169	[2] 172	[2] 163	[3] 166	[2] 175	[2] 168	149	[4] 169	162
New England	258	256	179	171	199	191	246	241	[5] 189	233
Middle Atlantic	140	181	188	175	155	171	165	163	178	167
East North Central	151	132	141	130	[3] 135	145	132	123	119	114
West North Central	176	143	255	199	251	255	259	209	[6] 295	282
South Atlantic	146	173	[2] 106	[2] 138	128	[2] 153	[2] 183	156	114	104
East South Central	91	120	91	80	97	63	69	80	51	63
West South Central	148	144	195	162	148	176	162	125	162	144
Mountain	191	239	153	239	134	191	95	162	153	86
Pacific	281	194	206	223	293	270	180	165	258	235

MEASLES CASE RATES

	Jan. 3	Jan 10	Jan 17	Jan 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7
Total	158	215	[2] 141	[2] 213	[3] 214	[2] 254	[2] 297	383	[4] 358	418
New England	380	395	440	497	484	576	661	720	[5] 585	656
Middle Atlantic	121	169	157	187	205	205	287	373	343	428
East North Central	294	417	127	379	[3] 373	453	515	688	632	789
West North Central	10	19	12	27	21	17	31	27	[6] 75	68
South Atlantic	53	83	[2] 43	[2] 38	37	[2] 49	[2] 98	110	81	100
East South Central	17	29	46	74	91	51	74	51	46	86
West South Central	9	5	23	14	14	37	51	14	51	23
Mountain	115	134	267	248	286	782	153	620	916	29
Pacific	116	194	160	55	17	61	29	64	61	107

SCARLET FEVER CASE RATES

	Jan. 3	Jan 10	Jan 17	Jan 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7
Total	300	369	[2] 355	[2] 370	[3] 364	[2] 412	[2] 400	390	[4] 408	395
New England	609	661	561	596	534	611	564	606	[5] 558	584
Middle Atlantic	286	324	294	326	322	373	407	376	412	372
East North Central	243	383	375	369	[3] 379	426	397	432	434	433
West North Central	527	757	755	804	779	871	728	742	[6] 758	775
South Atlantic	203	160	[2] 243	[2] 189	185	[2] 255	[2] 277	167	203	171
East South Central	172	229	183	183	217	97	212	223	183	194
West South Central	83	148	116	195	204	162	121	125	144	185
Mountain	162	382	534	305	258	334	382	248	315	286
Pacific	247	189	183	220	226	258	177	186	223	218

SMALLPOX CASE RATES

	Jan. 3	Jan 10	Jan 17	Jan 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7
Total	48	57	[2] 58	[2] 70	[3] 67	[2] 76	[2] 79	66	[4] 66	62
New England	0	0	0	0	0	0	0	0	[5] 0	0
Middle Atlantic	3	3	10	6	9	2	4	2	3	1
East North Central	27	40	39	48	[3] 35	39	35	56	28	42
West North Central	129	220	193	180	195	145	193	126	[6] 124	114
South Atlantic	39	30	[2] 64	[2] 38	45	[2] 62	[2] 98	67	43	51
East South Central	372	395	217	675	652	823	675	532	583	652
West South Central	32	65	32	32	60	125	139	83	116	74
Mountain	48	29	57	95	48	29	162	86	57	48
Pacific	191	148	212	209	177	267	220	215	313	206

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Racine, Wis., not included.
[4] Hartford, Conn., and Wichita, Kans., not included.
[5] Hartford, Conn., not included.
[6] Wichita, Kans., not included.

Summary of weekly reports from cities, December 28, 1924, to March 7, 1925—Annual rates per 100,000 population—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7
Total	37	36	[2] 21	[2] 17	[3] 18	[2] 13	[2] 13	11	[4] 14	11
New England	25	15	25	20	7	30	20	0	[5] 13	7
Middle Atlantic	58	49	21	20	19	13	6	10	8	10
East North Central	28	23	23	11	[3] 10	8	6	6	7	11
West North Central	4	6	10	6	12	0	10	4	[6] 17	6
South Atlantic	41	55	[2] 21	[2] 11	37	[2] 17	[2] 34	8	20	8
East South Central	40	51	17	29	23	11	40	34	34	34
West South Central	37	70	70	42	60	23	46	42	42	28
Mountain	0	10	0	48	19	29	19	38	76	10
Pacific	17	26	6	15	3	17	12	23	9	15

INFLUENZA DEATH RATES

	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7
Total	19	21	[2] 22	[2] 22	[3] 23	[2] 30	[2] 28	30	[4] 34	30
New England	3	17	27	10	27	47	27	17	[5] 40	17
Middle Atlantic	21	20	18	20	16	24	22	21	20	15
East North Central	10	16	15	18	[3] 12	13	17	18	24	27
West North Central	9	13	2	20	15	20	11	22	[6] 39	35
South Atlantic	26	35	[2] 47	[2] 23	39	[2] 49	[2] 55	55	49	53
East South Central	63	46	46	63	74	69	63	74	126	103
West South Central	51	41	87	92	82	97	122	153	148	143
Mountain	38	19	29	10	38	57	57	57	19	19
Pacific	12	20	12	12	20	41	4	12	29	29

PNEUMONIA DEATH RATES

	Jan. 3	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7
Total	203	192	[2] 215	[2] 211	[3] 206	[2] 225	[2] 222	216	[4] 201	205
New England	174	122	157	216	241	211	239	241	[5] 242	226
Middle Atlantic	226	228	260	234	230	253	231	216	185	210
East North Central	165	152	152	142	[3] 145	164	168	184	171	195
West North Central	101	90	107	120	118	134	131	131	[6] 161	140
South Atlantic	250	246	[2] 294	[2] 275	252	[2] 315	[2] 270	252	305	268
East South Central	303	292	189	320	303	326	320	320	292	260
West South Central	341	260	449	362	229	352	404	408	260	229
Mountain	229	229	248	324	315	191	277	219	267	162
Pacific	188	184	163	208	217	196	192	213	163	139

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Racine, Wis., not included.
[4] Hartford, Conn., and Wichita, Kans., not included.
[5] Hartford, Conn., not included.
[6] Wichita, Kans., not included.

FOREIGN AND INSULAR

BOLIVIA

Mortality—Smallpox—Typhus fever—La Paz—January 1-31, 1925.—During the month of January, 1925, 216 deaths from all causes were reported at La Paz, Bolivia. Estimated population, 100,000. Five deaths from smallpox and two cases of typhus fever were reported during this period.

CANARY ISLANDS

Plague—Measures for destruction of foci not carried out.—According to information dated February 10, 1925, official declaration was made under date of November 30, 1924, to the effect that the occurrence of plague had been reported in the Canary Islands, at Grand Canary and Teneriffe, since the year 1907; that the measures ordered to be carried out to extinguish the foci of infection had been unsuccessful, owing largely to local indifference; and that commissions had been appointed to study the existing foci and to propose measures for their destruction. It was stated February 10 that the work of extinguishing the plague foci had not been begun.

The last reported occurrence of plague during the year 1924 was for December 19, 1924, with three cases and one fatality at Realejo Alto, Santa Cruz de Teneriffe. On January 3, 1925, a case of plague was reported in the vicinity of Santa Cruz de Teneriffe.

FINLAND

Lethargic encephalitis—Typhoid fever—Paratyphoid fever—January 16-31, 1925.—During the period January 16-31, 1925, 4 cases of lethargic encephalitis, 62 cases of typhoid fever, and 20 cases of paratyphoid fever were reported in Finland. Population, 3, 435,249.

LATVIA

Typhus fever—Other communicable diseases—December, 1924.—During the month of December, 1924, 14 cases of typhus fever were reported in the Republic of Latvia. During the same period, other communicable diseases were reported as follows: Measles, 192 cases; typhoid fever, 88; paratyphoid fever, 2; epidemic mumps, 119; whooping cough, 48. Population, estimated, 2,000,000.

MALTA

Lethargic encephalitis—Malta (undulant) fever—Typhoid fever—February 1-15, 1925.—During the period February 1-15, 1925, 4

cases of lethargic encephalitis, 10 cases of Malta (undulant) fever, and 2 cases of typhoid fever were reported in the Island of Malta. Population, 216,702.

MEXICO

Smallpox—Monterey—Vaccination.—Under date of March 14, 1925, the smallpox situation at Monterey, Mexico, was reported[1] not to be under control and smallpox was stated to have appeared in some of the better sections of the town. At many points in Mexico all persons are required to be vaccinated before departing by train. The health officer of Nuevo Laredo, Mexico, has vaccinated the school children and all persons in hospitals; and in certain sections of the city door-to-door vaccination has been done.

PERU

Plague—Callao—February, 1925.—Press dispatches from Callao, Peru, dated February 15, 1925, state that there have occurred recently 6 fatal cases of plague in that city, of which 4 occurred in children of one family.

UNION OF SOUTH AFRICA

Plague—Plague-infected rodent—January 25-31, 1925.—During the week ended January 31, 1925, four cases of plague with one death were reported in the Union of South Africa (three cases, one fatal, in the native population, and one case in a European). For distribution of occurrence according to locality, see page 631.

During the same period a plague-infected house mouse was found in the town of Edenburg, Edenburg District. The Province was not stated.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended March 27, 1925[2]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				Nov. 30-Dec. 27, 1924: Cases, 5; deaths, 5.
India				Jan. 11-17, 1925: Cases, 2,675; deaths, 1,628.
Bombay	Jan. 18-24	1	1	
Calcutta	Jan. 25-31	18	15	
Madras	Feb. 1-14	27	17	
Rangoon	Jan. 25-31	1		
Siam:				
Bangkok	Jan. 18-31	3	1	

[1] Public Health Reports, Feb. 6, 1925, p. 275.
[2] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended March 27, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo	Feb. 1-7	1	4	
Gold Coast				November, 1925: Cases, 7, deaths, 6.
India				Jan. 11-17, 1925. Cases, 3,970; deaths, 3,522.
Karachi	Feb. 8-14	1	1	
Madras Presidency	Jan. 11-17	222	177	
Rangoon	Jan. 25-31	10	11	
Indo-China:				
Saigon	Dec. 25-31	1	1	Including 100 square kilometers surrounding country.
Irak	June 29-Dec 13	18	13	
Japan	Nov. 16-Dec. 6	7		
Java:				
West Java—				
Cheribon	Jan 30			Town. Present.
Pasoeroean	Dec. 27			Province. Epidemic in one locality.
Pekalongan	Dec 25-31		44	Province.
Prabalingga	Dec. 27			Province. Epidemic.
Tegal	Dec. 25-31		16	Province.
Nigeria				November, 1924: Cases, 78; deaths, 61.
Peru:				
Callao	February, 1925	6	6	Four of these in children of one family.
Siam:				
Bangkok	Jan. 25-31	1	1	
Straits Settlements:				
Singapore	do	3	2	
Union of South Africa				Jan. 25-31, 1925. Cases, 4; deaths, 1 Native cases, 3; deaths, 1; white, 1 case.
Cape Province—				
De Aar District—				
Malay Camp	Jan 25-31	1	1	
Edenburg (town)	do			1 plague rodent; house mouse.
Transvaal—				
Boshof District	do	2		Native. On farm.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria	Dec. 21-31	37		
Do	Jan. 1-20	107		
Arabia				
Aden	Feb. 8-21	2		Imported.
Bolivia:				
La Paz	Jan. 1-31		5	
Brazil.				
Pernambuco	Jan. 11-17	7	6	
British South Africa:				
Northern Rhodesia	Jan 27-Feb 2	3		Natives.
Southern Rhodesia	Jan. 29-Feb. 4	1		
Canada:				
British Columbia—				
Vancouver	Mar. 1-7	17		
Ceylon:				
Colombo	Feb. 1-7	1		Port case.
China.				
Amoy	Jan 25-Feb 7			Present.
Antung	Jan 19-Feb. 8	6	1	
Hongkong	Jan. 4-17	4	2	
Manchuria—				
Harbin	Jan. 15-21	1		
Shanghai	Feb. 8-14	1	1	Case, foreign, death, Chinese.
France				December, 1924. Cases, 12.
Great Britain:				
England and Wales				Jan. 25-Feb. 28, 1925: Cases, 734.
Newcastle-on-Tyne	Feb. 15-21	1		
Greece				December, 1924: Cases, 2.
India				Jan. 11-17, 1925: Cases, 2,597; deaths, 514.
Bombay	Jan. 18-31	55	26	Mar. 5, 1925: Severely epidemic.
Calcutta	Jan. 25-31	97	66	
Karachi	Feb. 8-14	13	1	
Madras	Feb. 1-14	173	54	
Rangoon	Jan. 25-31	40	10	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended March 27, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China:				
Saigon	do	5	2	Including 100 square kilometers of surrounding country.
Iraq	June 29–Dec. 13	137	66	
Italy	Dec. 7–27	2		
Java				
West Java—				
Pekalongan	Dec. 25–31	3		Province.
Mexico				
Guadalajara	Mar 3–9		1	
Mexico City	Feb 1–14	4		Including Federal District.
Monterey	Mar 14			Present.
Vera Cruz	Mar. 2–8		2	
Nigeria				November, 1924: Cases, 77; deaths, 23.
Poland				Nov 30–Dec. 20, 1924: Cases, 6.
Siam:				
Bangkok	Jan. 18–31	4	6	
Spain				
Malaga	Feb. 22–28		8	
Tripoli:				
Tripoli	July 14–Dec. 12	5		
Tunis				
Tunis	Feb 25–Mar. 3	24	20	
Union of South Africa				
Cape Province—				
De Aar District	Jan 25–31			Outbreak at railway camp.
Orange Free State -				
Ladybrand District	do			Outbreak On farm.
Uruguay				August to October, 1924. Cases, 20; deaths, 1.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Bolivia:				
La Paz	Jan 1–31	2		
Chile.				
Valparaiso	Feb 1–14		5	
Czechoslovakia				December, 1924: Cases, 5.
Greece				Do
Latvia				Dec 1–31, 1924: Cases, 14.
Mexico				
Mexico City	Feb 1–14	11		Including Federal District.
Morocco				November, 1924: Cases, 5.
Palestine				
Ramleh	Feb. 10–16	1		
Poland				Dec 7–20, 1924 Cases, 163; deaths, 11.

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Gold Coast				November, 1924: Cases, 1; deaths, 1.

Reports Received from December 27, 1924, to March 20, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29–Nov. 29, 1924: Cases, 9; deaths, 8.
Colombo	Nov. 16–22	1		
Do	Jan 11–24	2	2	
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 27,164; deaths, 16,228. Jan. 4–10, 1925: Cases, 2,328; deaths, 1,320.
Bombay	Nov. 23–Dec. 20	4	4	
Calcutta	Oct. 26–Jan. 3	59	51	
Do	Jan. 4–24	39	37	
Madras	Nov. 16–Jan. 3	69	40	
Do	Jan. 4–31	94	68	
Rangoon	Nov. 9–Dec. 20	9	2	
Do	Jan. 4–10	4	3	
Do	Jan. 18–24	1	1	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 20, 1925—Continued

CHOLERA—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China				Aug 1-Sept. 30, 1924: Cases, 14; deaths, 10.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept. 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov. 30-Dec. 6	1		
Siam:				
Bangkok	Nov. 9-29	4	2	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 2-Jan. 3	30	13	
British East Africa				
Tanganyika Territory	Nov 23-Dec. 27	17	10	
Uganda	Aug-Nov, 1924	242	211	
Canary Islands				
Las Palmas	Feb 4	1		Stated to have been infected with plague Sept. 30, 1924
Realejo Alto	Dec 19	3	1	Vicinity of Santa Cruz de Teneriffe
Teneriffe—				
Santa Cruz	Jan 3	1		In vicinity.
Celebes				
Macassar	Oct. 29			Epidemic
Ceylon				
Colombo	Nov. 9-Jan. 3	12	9	
Do.	Jan 4-31	3	4	Five plague rodents.
China				
Foochow	Dec 28-Jan 3			Present.
Nanking	Nov. 23-Jan. 31			Do.
Shing Hsien	October, 1924		790	
Ecuador.				
Chimborazo Province—				
Alausi District	Jan 14		14	At two localities on Guayaquil and Quito Railway.
Guayaquil	Nov. 16-Dec 31	9	3	Rats taken, 27,004; found infected, 92
Do	Jan 1-Feb 15	31	12	Rats taken, 31,252; rats found infected, 114.
Yaguachi	Feb. 1-15	1	1	
Egypt				Year 1924: Cases, 373. Jan. 1-28, 1925: Cases, 15
City—				
Alexandria	Year 1924	2	2	Last case, Nov. 26.
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec 7.
Suez	do	20	13	Last case, Dec 20.
Province—				
Dakhalia	Jan. 1-8	1	1	
Kalioubiah	do	3		
Menoufieh	do	7	3	
Gold Coast				Sept.-Oct., 1924: Deaths, 42.
Hawaii				
Honokaa	Nov. 4	1		Plague-infected rodents found Dec. 9, 1924 and Jan. 15, 1925.
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 28,164; deaths, 21,505. Jan. 4-10, 1925: Cases, 4,299; deaths, 3,461.
Bombay	Nov. 22-Jan. 3	4	3	
Do.	Jan 4-17	2	2	
Calcutta	Jan. 18-24	1	1	
Karachi	Nov. 30-Dec. 16	2	1	
Do.	Jan. 4-24	10	9	
Madras Presidency	Nov. 23-Dec. 20	528	379	
Do.	Dec. 28-Jan. 3	157	108	
Do.	Jan. 4-10	214	164	
Rangoon	Oct. 26-Jan. 3	26	25	
Do.	Jan. 4-24	28	23	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 20, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 25; deaths, 20.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Saigon	Jan. 11-17	2	1	Including 100 square kilometers of surrounding territory.
Japan	Aug. 10-Nov 15	12		
Java:				
East Java—				
Blitar	Nov 11-22			Province of Kediri; epidemic.
Pare	Nov 29			Do.
Soerabaya	Nov. 16-Dec 13	53	55	
Do	Dec 21-31	18	17	
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov. 18-Dec. 22		80	
Pekalongan	Oct 14-Nov. 3		29	
Do	Nov 18-Dec 22		133	
Tegal	Oct. 14-Nov. 24		10	
Madagascar				Nov. 1-Dec. 15, 1924: Cases, 254; deaths, 218.
Provinces—				
Itasy	Nov. 1-Dec 15	4	2	
Moramanga	do	49	34	
Tananarive	Oct. 16-Dec. 31	298	274	Tananarive City (interior), Oct. 16-Nov. 30 Cases, 8; deaths, 7.
Do	Jan 1-15	54	48	Bubonic, pneumonic, septicemic.
Tananarive (town)	Dec. 16-31	4	4	
Do	Jan. 1-15	1	1	
Other localities	Dec. 16-31	71	62	
Do	Jan. 1-15	53	47	
Towns (ports)—				
Fort Dauphin	Nov. 1-Dec. 15	12	5	
Majunga	Nov 1-30	1	1	
Tamatave	do	1	1	
Mauritius Island				Sept. 7-Oct 18, 1924: Cases, 60 deaths, 53.
Morocco.				
Marrakech				Feb. 9, 1925: Present in native quarter of town. Stated to be pneumonic in form and of high mortality.
Nigeria				August-October, 1924: Cases, 309; deaths, 256.
Siam:				
Bangkok	Dec. 28-Jan 3	1	1	
Siberia				
Transbaikalia—				
Turga	October, 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Do	Jan. 4-17	3	2	
Syria:				
Beirut	Jan. 11-20	1		
Turkey				
Constantinople	Jan. 9-15	5	5	
Union of South Africa	Jan 4-24	13	4	
Cape Province—				
De Aar District	Nov. 22-Jan. 3	4	1	Native.
Do	Jan. 4-10	2		Natives; on farms.
Dronfield	Dec. 7-13	1		8 miles from Kimberley.
Kimberley	Dec. 7-27	3	2	
Maraisburg District	Nov. 22-Dec. 13	4	2	Bubonic, on Goedshoop Farm.
Orange Free State—				
Bloemfontein District	Dec. 21-Jan. 3	5	2	
Do	Jan. 11-17	1	1	Native; on farm.
Ficksburg District	Dec 28-Jan. 3	1	1	
Hoopstad District	Dec. 7-13	1		On farm.
Kroonstad District	Nov. 22-Jan. 3	2	1	
Do	Jan. 18-24	1	1	Native; on farm.
Philippolis District	Dec. 21-27	1		
Vredefort District	Dec. 7-20	2	2	On farms.
Steynsburg District	Jan 4-10	1		Native; on farm. Province not stated

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 20, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa:				
Transvaal—				
Boshof District	Dec 7-Jan. 3	3	3	On farm.
Do	Jan 11-24	7	1	Native, 4 cases; white, 1 fatal case. On farms.
Smithfield	do.	1		
Wolmaransstad District	Nov 22-29	1	1	On Farm Wolverspruit Vaal River. Native.
On vessel				
S. S. Conde				At Marseille, France, Nov. 6, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec 20, 1924: Cases, 372.
Algiers	Jan 1-31	5		
Arabia				
Aden	Jan. 25-Feb. 7	3		Imported.
Bolivia				
La Paz	Nov. 1-Dec 31	20	11	
Brazil				
Pernambuco	Nov 9-Jan 3	100	27	
Do	Jan 4-10	15	6	
British East Africa				
Kenya—				
Mombasa	Jan. 18-24	1		
Uganda—				
Entebbe	Oct 1-31	4		
British South Africa				
Northern Rhodesia	Oct. 28-Dec. 15	57	2	
Canada:				
British Columbia—				
Vancouver	Dec. 14-Jan 3	32		
Do	Jan 4-Feb 28	206		
Victoria	Jan. 18-Feb 7	2		
Manitoba—				
Winnipeg	Dec 7-Jan 3	14		
Do	Jan 4-Feb. 27	30		
New Brunswick—				
Bonaventure and Gaspe Counties.	Jan 1-31	1		
Northumberland	Feb. 8-14	1		County
Ontario				Nov 30-Dec. 27, 1924: Cases, 33. Dec 28-Feb. 28, 1925: Cases, 41; death, 1
Hamilton	Jan. 24-30	1		
Ceylon				July 27-Nov 29, 1924: Cases, 27; death, 1
Colombo	Jan 18-31	3		
China:				
Amoy	Nov. 9-Jan 24			Present.
Antung	Nov 17-Dec. 28	5		
Do	Jan. 5-18	4		
Foochow	Nov. 2-Jan. 27			Do.
Hongkong	Nov 9-Jan. 3	6	2	
Nanking	Jan 4-17			Do
Shanghai	Dec 7-27	1	2	
Do	Jan 18-24	1		
Do	Feb. 1-7	2	3	Deaths among Chinese.
Chosen:				
Seoul	Dec 1-31	1		
Czechoslovakia				April-June, 1924: Case, 1; occurring in Province of Moravia.
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 31	10		
Do	Jan. 8-28	8		
Esthonia				Dec. 1-31, 1924: Cases, 2.
France				July-November, 1924. Cases, 69.
St. Malo	Feb. 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 20, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Germany				June 29-Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1-10	1		
Gibraltar	Dec 8-14	1		
Gold Coast				July-Sept., 1924: Cases, 82; deaths, 1.
Great Britain:				
England and Wales	Nov 23-Jan. 3	472		
Do	Jan 4 24	351		
Newcastle-on-Tyne	Jan. 18-Feb. 14	8		
Greece				Jan.-June, 1924: Cases, 170; deaths, 27
Do				July-Nov, 1924: Cases, 36; deaths, 26
Saloniki	Nov. 11-Dec. 22	3		
India				Oct 19, 1924, to Jan 3, 1925: Cases, 12,564; deaths, 2,857. Jan. 4-10, 1925: Cases, 2,442; deaths, 497
Bombay	Nov 2-Jan 3	30	18	
Do	Jan. 4 17	17	11	
Calcutta	Oct. 26-Jan 8	307	170	
Do	Jan. 4-24	262	164	Mar 5, 1925. Epidemic.
Karachi	Nov 16-Jan 3	16	2	
Do	Jan 4-Feb. 7	39	5	
Madras	Nov 16-Jan 3	122	48	
Do	Jan 4-31	112	36	
Rangoon	Oct 26-Jan 3	86	28	
Do	Jan. 4-24	156	24	
Indo-China				Aug 1-Sept 30, 1924: Cases, 223; deaths, 76.
Province—				
Anam	Aug 1-Sept. 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov 16-Jan. 3	17	5	Including 100 sq. km. of surrounding country.
Do	Jan 4-10	3	1	
Tonkin	Aug. 1-Sept. 30	19	7	
Iraq:				
Bagdad	Nov. 9-Dec 27	2	1	
Italy				June 29-Dec. 6, 1924. Cases, 61.
Jamaica				Nov. 30-Jan 3 Cases, 50. Reported as alastrim.
Do				Jan. 4-31, 1925. Cases, 43. Reported as alastrim.
Kingston	Nov 30-Dec. 27	4		Reported as alastrim.
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Nagasaki	Feb. 9-15	3		
Java.				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov 12-19			Epidemic in two native villages.
Soerabaya	Oct. 19-Dec 31	685	212	
West Java—				
Batam	Oct 14-20	2		
Batavia	Oct. 21-Nov 14	2		
Do	Dec. 20-Jan. 2	19	4	
Cheribon	Oct. 14-Nov. 24	15		
Pekalongan	do	22		
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5.
Mexico				
Durango	Dec. 1-31		5	
Do	Jan. 1-Feb 28		10	
Guadalajara	Dec. 23-29		1	
Do	Jan. 6-12		1	
Mexico City	Nov. 23-Dec. 27	5		
Do	Jan. 11-31	5		
Monterey				Jan. 24, 1925: Outbreak.
Salina Cruz	Dec. 1-31	1	1	
Saltillo	Feb. 22-28		1	
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-Feb. 28	40	15	
Vera Cruz	Dec. 1-Jan 3		10	
Do	Jan. 5-Feb. 15		25	
Do	Feb. 22-28		6	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 20, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Nigeria				Jan June, 1924: Cases, 357; deaths, 87
Do				July-Oct, 1924: Cases, 10; deaths, 2
Persia:				
Teheran				Sept. 23-Dec. 21, 1924: Deaths, 12.
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept 21-Nov. 29, 1924: Cases, 19; deaths, 2.
Portugal:				
Lisbon	Dec 7-Jan. 3	17		
Do	Jan 4-Feb 7	45		
Oporto	Nov 30-Dec. 27	3	2	
Do	Jan 11-17	1		
Russia				Jan-June, 1924: Cases, 9,683. July-Sept., 1924: Cases, 1,251.
Siam				
Bangkok	Dec 28-Jan 3	1	1	
Spain				
Barcelona	Nov 27-Dec 31		5	
Cadiz	Nov 1-Dec 31		51	
Do	Jan 1-31		9	
Madrid	Year 1924		40	
Malaga	Nov 23-Jan. 3		97	
Do	Jan 4-Feb. 21		68	
Valencia	Nov 30-Dec 6	2		
Do	Feb 15-21	2		
Switzerland				
Lucerne	Nov 1-Dec 31	19		
Do	Jan. 1-31	24		
Syria:				
Aleppo	Nov 23-Dec. 27	13		
Do	Jan. 4-Feb 14	55	17	
Damascus	Jan. 6-13	2		
Tunis				
Tunis	Nov. 25-Dec 29	42	35	
Do	Jan 1-14		29	
Do	Jan. 22-Feb 25		120	
Turkey:				
Constantinople	Dec. 13-19	5		
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 14.
Cape Province	Nov 9-Jan 17			Outbreaks.
Orange Free State	Nov 2-8			Do.
Transvaal	Nov 9-Jan 10			Do.
Uruguay				Jan-June, 1924: Cases, 101; deaths, 2.
Do				July, 1924: Cases, 25; deaths, 3.
On vessel:				
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St. Malo, France, from Sfax, Tunis; believed to have imported smallpox infection.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 101; deaths, 14.
Algiers	Nov. 1-Dec 31	5	1	
Do	Jan. 1-31	3	3	
Bolivia.				
La Paz	do	3		
Bulgaria				Jan.-June, 1924: Cases, 191; deaths, 28.
Do				July-Oct., 1924: Cases, 5.
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Do	Jan. 6-12		2	
Iquique	Nov. 31-Dec. 1		2	
Do	Feb. 1-7		1	
Talcahuano	Nov. 16-Dec. 20		5	
Do	Jan. 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-31		4	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 20, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Chosen:				
Seoul	Nov. 1-30	1	1	
Egypt.				
Alexandria	Dec. 3-9	1	1	
Cairo	Oct. 1-Dec. 23	13	8	
Esthonia				Dec. 1-31, 1924: Cases, 5.
France				July-Oct., 1924: Cases, 7.
Gold Coast				Oct. 1-31, 1924: 1 case.
Greece				May-June, 1924. Cases, 116; deaths, 8.
Do				July-Nov., 1924: Cases, 35; deaths, 4.
Saloniki	Nov 17-Dec. 15	3	2	
Do	Jan 25-31	1		
Japan				Aug 1-Nov. 15, 1924. Cases, 2.
Latvia				Oct.-Nov., 1924: Cases, 16.
Lithuania				Aug-Oct., 1924: Cases, 15; deaths, 1.
Mexico:				
Durango	Dec. 1-31		1	
Guadalajara	Dec 23-29		1	
Mexico City	Nov. 9-Jan 3	80		Including municipalities in Federal District.
Do	Jan 11-31	29		Do
Palestine				Nov. 12-Dec 8, 1924 Cases, 7.
Ekron	Dec 23-29	1		
Jerusalem	do	2		
Do	Jan. 20-26	1		
Mikveh Israel	do	1		
Peru				
Arequipa	Nov 24-30		1	
Poland				Sept. 28-Dec. 6, 1924: Cases, 379; deaths, 22.
Portugal				
Lisbon	Dec 29-Jan 4		2	
Oporto	Jan 4-Feb 7	2		
Rumania				Jan-June, 1924: Cases, 2,906; deaths, 328.
Do				July-Aug, 1924: Cases, 89; deaths, 12
Constanza	Dec 1-10	1		
Russia				Jan 1-June 30, 1924: Cases, 92,000 July-Sept., 1924: Cases 5,225.
Leningrad	June 29-Nov. 22	12		
Spain.				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Sweden:				
Goteborg	Jan. 18-24	1		
Tunis				July 1-Dec 20, 1924: Cases, 40.
Turkey.				
Constantinople	Nov. 15-Dec. 19	6	1	
Do	Jan 2-22	6		
Do	Feb. 1-7	1	1	
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 345; deaths, 87.
Cape Province	Nov. 1-Dec. 31	126	24	Dec. 21-Jan. 17: Outbreaks.
East London	Nov. 16-22	1		
Do	Jan. 18-24	1		
Natal	Nov 1-Dec. 31	130	50	
Do	Jan 18-24			Outbreaks
Orange Free State	Nov. 1-Dec 31	59	8	Dec. 7-Jan. 17, Outbreaks.
Transvaal	do	30	5	
Yugoslavia				Aug. 3-Oct. 18, 1924: Cases, 17; deaths, 2.
Belgrade	Nov. 24-Dec 28	5		

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Gold Coast	October, 1924	3	3	
Salvador:				
San Salvador	June-Oct., 1924	77	28	Last case, Oct. 22, 1924.

X

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SPECIAL ARTICLES

Vaccination by Mouth Against Bacillary Dysentery

Oxidation-Reduction Studies. VII. Dichloro Substitution Products of Phenol Indophenol

New York Law on Making and Reporting Smallpox Vaccinations

WASHINGTON
GOVERNMENT PRINTING OFFICE
1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

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PUBLIC HEALTH REPORTS

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VACCINATION BY MOUTH AGAINST BACILLARY DYSENTERY

By Ella M. A. Enlows, Associate Bacteriologist, Hygienic Laboratory, United States Public Health Service

DISCUSSION OF METHOD

Vaccination by mouth is not a new method. Pasteur (1880) showed that some immunity followed the feeding of anthrax spores to sheep, and that considerable resistance was shown by chickens fed with the cholera vibrio. This method was also used more than 30 years ago by Ehrlich (1891) for the production of antiricin and antiabrin in laboratory animals. Renewed interest has been brought about largely by the work of Besredka (1919 et seq.). He stressed the addition of bile as a necessary adjunct to certain of the bacilliary vaccines (typhoid, cholera), claiming that the eroding action of the bile upon the intestinal mucosa would bring about intimate contact of the ingested micro-organisms and the deeper-lying cells of the intestinal wall. This, he concluded, would render such cells able to withstand future invasion of living organisms, thus offereing an effective barrier against a generalized infection. Calmette (1923) questions the erosive action of the bile. He points out that the epithelium of the mucosa is never sufficiently intact to prevent the entrance of bacteria, and that, moreover, the gastric, biliary, and intestinal gland secretions must dissolve and digest large numbers of living and dead bacteria. He believes that the continuous or intermittent action of the products of this lysis may bring about immunity to certain species of bacteria which have become adapted to life in the digestive tract. Our own experiments lead us to believe that very large amounts of bile are necessary in order to bring about diarrhea or other readily observable pathological condition. The few sections made did not demonstrate erosion. In order to give to human beings, doses equivalent to those producing definite pathological conditions in the rabbit, amounts varying from 100 to 200 c. c. might have to be used. Perhaps even more than this would be required, provided the susceptibility were more or less the same.

Besredka's theory of local immunity is not new. Loeffler (1906), in working with mouse typhoid, expressed much the same view as did others following him. The theory of local immunity was sug-

gested to these early investigators largely because they could not demonstrate with any degree of constancy (and frequently not at all) certain antibodies (e. g., agglutinins, bacteriolysins, etc.) in the blood stream of the animals vaccinated by mouth. And yet these animals could resist infective doses of the particular organisms used. Loeffler (1906) believed that it was no doubt due to cellular action, either of the epithelial cells themselves, or of the leucocytes, which, he points out, are so abundant in the intestinal canal.

Vaccination by the subcutaneous route against bacillary dysentery was attempted soon after the discovery of the causal organisms. It was found very early, however, that the reactions were extremely severe, especially with the Shiga type (*Eberthella dysenteriae* Shiga), death following in a few instances in man, and in many of the animals. Quite naturally, then, when it was shown that much larger doses of vaccines prepared from other organisms could be administered by mouth, vaccination by mouth was undertaken against bacillary dysentery. Zeitlin (1905) was not able to demonstrate agglutinins following the administration of the Shiga type (human). Iida and Toyoda (1907) showed antibody response following the ingestion of Shiga dysentery bacilli previously digested with pepsin and trypsin. Shiga (1908–9) used heat-killed organisms and succeeded in developing some immunity.

Chvostek (1908) used killed Shiga bacilli and demonstrated a small quantity of antitoxin in the blood of a part of the treated animals.

Dopter (1908) fed mice definite amounts of dried dysentery organisms previously killed by heat and found that the mice developed a certain degree of immunity 10 to 12 days after administration of the first dose, but that this immunity did not appear to last beyond 30 days. Later (1909) he used sensitized dysentery bacilli. The organisms were treated with immune serums; and, after agglutination had occurred, the precipitate was dried and used as the vaccine. By this method he found the immunity was of longer duration (four months), and no severe reactions followed. He did not consider that the method of administration of dysentery bacilli to man by mouth would be very practicable.

Besredka (1919 et seq.) used both killed and living vaccines. He considered that the natural immunity of rabbits against typhoid and paratyphoid depended upon the integrity of the intestinal mucosa; so that when the intestinal mucosa is more or less denuded, the vaccine may come into close contact with the underlying cells and resistance be established. To bring about this erosion, Besredka administered ox bile in 8 to 10 c. c. amounts on the day prior to the ingestion of the vaccine. The bile was mixed with licorice powder in some instances. On the following morning the animals (kept

without food) were given a second dose of the ox bile, and 2 hours later the vaccine was administered *per os* by means of a small catheter.

He attempted in the following way to show that the resistance resulting from this method of vaccination resided in the intestinal wall:

Rabbits were prepared with bile and then given *per os* a sublethal dose of paratyphoid B bacilli (*Salmonella schottmülleri*). The agglutinin titer and the other (protective) antibodies rose rapidly and reached their height at the twenty-fifth day. On that day the agglutinin titer varied from 1: 20,000 to 1: 80,000 (different animals). At the end of two months the agglutinins were found to be rapidly diminishing. The ingestion at this time of a second dose of living bacteria plus bile did not result in a second increase in the agglutinins and protective substances. On the contrary, the agglutinins two months later had dropped to 1:200 and 1:400. Besredka assumed, therefore, that the first ingestion of the living bacteria produced an impermeability of the intestinal wall which prevented the living bacteria and their endotoxin given with the second dose from passing through into the general circulation and causing the formation of immune bodies. He believed that the immunity was more lasting if living bacilli were administered. Subsequent experiments enabled him to conclude that ox bile was not necessary in case of the dysentery bacilli of the Shiga type, since the organisms themselves exerted an erosive action upon the intestinal mucosa.

Following the work of Besredka, a number of investigators again took up the problem of vaccination by mouth against various intestinal infections. The use of this method presented itself as a problem of importance, because Besredka's advocacy of its use in human beings was followed very soon by the sale of vaccine "pellets" for such purposes. These pellets consisted of the dried vaccine, and were to be administered with the bile "pills" in most cases. According to the reports so far received, the trials with this commercial "bilivaccine" in foreign countries have been very successful. The results obtained, however, must be analyzed very critically before definite assertions are made as to the value of the treatment.

Zingher and Soletsky (1920) attempted to verify the work of Besredka in so far as it applied to animals. They experimented with *Salmonella schottmülleri*. They concluded that no immunity was produced in rabbits prepared with ox bile, and fed living or dead paratyphoid B bacilli. No agglutinin production was noted in these rabbits.

Kanai (1921) decided that a certain small degree of immunity was produced in rabbits by the oral administration of *Eberthella dysenteriae* Shiga.

Nicolle and Conseil (1922) submitted some evidence as to the efficiency of this method in man. Their experiments were conducted in Tunis. They point out the difficulties involved in determining the efficiency of dysentery vaccine administered by the oral route. Among other things the natives of this area are quite resistant to dysentery, due, so the investigators believe, to the consumption of polluted water in infancy; also, they found the virulence of the dysentery bacilli to be extremely variable. They finally secured a virulent strain and performed the following experiment: Cultures were sterilized at 75° C., then doses of 100 thousand millions were administered on the same days, both of the subjects fasting before and after the ingestion of the vaccine. Two other subjects were held as controls. The same dose was repeated on the second, third, and fifth days. On the fifteenth and eighteenth days after the last ingestion, the test doses of virulent bacilli were given (10 thousand millions of Shiga organisms). No illness occurred among the vaccinated subjects. Their serum showed no agglutinating power, even after the test dose. The two controls contracted a definite dysentery. The Shiga bacillus was isolated from the stools. The administration of antidysenteric serum resulted in prompt alleviation of the symptoms.

Anglade (1924) followed the procedure of Besredka in the vaccination of both the civil and military population of a garrison at Versailles in 1923. The vaccinations were made during an epidemic of Shiga and Hiss dysentery. Five hundred and forty-six persons were vaccinated, among whom there were 42 cases, or 7.7 per cent. Among the 586 nonvaccinated persons there were 253 cases, or 43 per cent.

Antonovsky (1924) also tried vaccination by mouth against an epidemic of dysentery in an asylum at Petrograd in 1923. The first case appeared July 13, and the vaccinations were begun July 31 and completed August 3. The total number of persons in the asylum was 2,768, one thousand of whom were vaccinated. At the end of September there had occurred 12 cases among the vaccinated, or 1.2 per cent, and 56 cases among the unvaccinated, or 3.1 per cent. Of the 12 cases occurring among the vaccinated, 9 came down during the first 10 days after the vaccination.

Lesbre and Verdeau (1924) found that the immunity was rather slow to appear when this method was used (rabbits). Their best results, and these were rather poor, were obtained when the final test dose was given 40 days after the last dose of vaccine.

Pascal (1924) reported upon a Flexner dysentery epidemic at a departmental insane asylum at Chalons-sur-Marne, in 1923 and 1924. He used the oral route for vaccination of 399 occupants out of a total of 410. Among the 399 vaccinated, only 3 cases occurred (0.7 per

cent). In 1923, out of a total of 256 occupants, none vaccinated, there were 65 cases (25.3 per cent). He does not say whether or not the occupants were in some cases the same persons in both years.

Gauthier (1924) tried vaccination against dysentery by the oral route among the Greek refugees. No infection was known to have occurred among the 29,880 persons vaccinated, although the disease continued to prevail among the unvaccinated groups. Agglutinins in high titer were found in the serum of those who had ingested the vaccine.

EXPERIMANTAL DATA

Technique.—In the first five experiments a No. 7 silk thread zebra catheter was used for the administration of the vaccine. In the subsequent experiments we used a small wooden mouth gag with a central opening through which a pipette or a syringe without needle was inserted. The animals swallow the fluid readily and the method is very rapid. No food was given for 18 hours prior to the administration of the vaccine.

In all of the later experiments young cultures were used, that is, those not over six hours old. The mortality was thus lessened. The majority of 18 to 24 hour cultures (solid media) of the Shiga type are toxic. The organisms were grown on 1 per cent glucose agar in Blake bottles, taken up in 0.85 per cent sodium chloride solution, killed by heat at 56° C. for 10 minutes, or 60° C. for 1 hour, or by 0.5 per cent phenol, then diluted to a definite turbidity with the aid of the nephelometer. The various doses and various methods of killing the cultures were used in order to give as many organisms as possible with least danger. As an initial dose (Shiga type) for intravenous or subcutaneous vaccination, 20,000,000 organisms were found to be fairly safe and 100 to 200 times this dose for the *per os* vaccination. Actual count of the organisms was not made in any case. Counts previously made enabled us to assume that at least 2,000,000,000 organisms were present in each cubic centimeter of a suspension having a turbidity of 1,000 parts per million.

The toxicity of the cultures is variable, due to unknown conditions. Using the same medium, strain, temperature, and period of incubation, differences still occur. In increasing the subsequent doses, care is therefore necessary. At times we have been able to double and triple the initial dose without great loss of our test animals; at other times heavy losses resulted. Variation in animal resistance is, of course, one factor. In the experiments now under way, dried organisms are being used, since we have found that in the dried condition the toxicity does not vary in any marked degree if the material is kept in a dry, cold atmosphere (desiccator over sulphuric acid, temperature not over 15° C.).

Ten experiments are summarized in Tables 1 to 5. More have been performed, but the virulence of the living cultures is variable, as is well known by all workers on bacillary dysentery. This has necessitated the repetition of a number of tests, since in most cases the test dose of living culture was given intravenously. Only those tests in which all of the control animals (3 to 6 in each test) died are included in this report. In those cases in which the test dose was given by mouth, we could regard it as a fourth vaccinating dose and repeat the living culture in greater concentration or by the intravenous route.

In some of the experiments the vaccinating doses were given on 3 successive days, with a 7 to 10 day interval, followed by three more daily doses, then the test dose 10 to 18 days later. In the majority of the experiments, however, the usual three doses were given one week apart, with the test dose 10 to 15 days after the last ingestion. In some cases the bile was given the day before, in others just a few minutes prior to the ingestion of the culture; and in some of the later experiments no bile at all was used, since as good results seemed to be obtained without the bile and the fatalities were slightly reduced.

A few experiments have been conducted with the Flexner type (*Eberthella paradysenteriae*). Not enough work has been done to make certain of more than one thing: Very much larger doses can be used than would be considered safe in case of the Shiga type. Very young rabbits are sometimes sensitive to amounts of 2 c. c. of a heat-killed saline suspension of Flexner type organisms standardized to a turbidity of 1,000 parts per million. Full-grown animals may safely be given 5 to 10 c. c. of such a suspension, provided young cultures (4 to 6 hours) are used. It is no easier to determine the test dose in case of this type than it is with the Shiga type; consequently large numbers of animals must be used if the results are to be considered trustworthy. In either case the lethal dose must be large enough to insure significant results in spite of animal and cultural variability, and yet not so large as to involve the question of death being due to toxicity. Under certain conditions the Flexner type is capable of producing toxin also; hence a vaccine for human use should be tested first on animals.

TABLE 1.—*The protection afforded by three different methods of vaccination. The protection percentage is based upon the actual number of animals surviving all three vaccinating doses and receiving the test dose of living organisms*

Vaccinated by mouth		Vaccinated intravenously		Vaccinated subcutaneously	
Number of rabbits receiving test dose	Per cent survival	Number of rabbits receiving test dose	Per cent survival	Number of rabbits receiving test dose	Per cent survival
4	50				
15	73				
7	42				
13	30	4	0	4	75
11	63	3	66	4	75
8	75	4	75	6	83
9	55	3	66	5	100
12	66	5	40	4	50
14	50	4	25	5	60
13	61	5	40	4	50
Total animals.. 106		28		32	
Per cent survivals....	57		45		70

While the greatest protection is shown by vacination by the subcutaneous route, 57 per cent is very encouraging for the oral method of vaccination. All of these experiments, as already stated, were performed with *Eberthella dysenteriae* Shiga; and from our knowledge of the action of test doses of living bacilli we must assume that at least some of the protection afforded is in the nature of resistance to the toxin injected with the organisms or subsequently liberated. In other words, when immunization occurs, some antitoxin is formed. Death does not occur rapidly in rabbits when living organisms are injected, unless enormous doses are used, and in the latter case the deaths are in a large proportion of cases due to the toxin injected, as can readily be shown at autopsy.

TABLE 2.—*The protection afforded by vaccination by mouth, with beef bile and without beef bile. The protection percentage is based upon the actual number of animals surviving all of the vaccinating doses and receiving the test dose of living organisms*

With bile		Without bile	
Number of rabbits	Per cent survival	Number of rabbits	Per cent survival
4	75		
		3	66
15	73		
11	45	5	20
8	37	6	50
10	30	5	60
8	50		
3	33	5	100
4	50	5	60
Total animals...63		29..	
Average protection..	49		59

Table 2 indicates that the advantage lies with the organisms alone without bile. It is hardly fair, however, to compare the results in

the case of 29 animals with the results using 63. Yet, even considering that there is practically no difference in the protection obtained, since greater risk is involved when the beef bile is used, it may be concluded that beef bile can be eliminated without disadvantage.

TABLE 3.—*The danger involved in the three methods of vaccination. The total number of animals receiving the first dose of vaccine, with the fatalities resulting from this initial dose, is shown in each case*

By mouth		Intravenously		Subcutaneously	
Number of rabbits	Number of deaths	Number of rabbits	Number of deaths	Number of rabbits	Number of deaths
5	1	6	6	6	6
11	4	3	0		
15	0	6	2	6	2
8	1	6	5	6	5
16	4	3	3	3	1
16	5	6	4	6	4
16	9	6	2	6	0
14	4	6	3	6	1
16	7	6	3	6	3
16	5	6	0	6	0
133	40	54	31	51	22
Per cent fatality	30		57		43

In Table 3 it is shown that the greatest danger follows the use of the intravenous method, as would naturally be expected because of the toxin content of the vaccine. There is no great difference between the subcutaneous and *per os* methods; but the advantage is in favor of the *per os* method, and this advantage appears still greater when consideration is taken of the very much larger doses which with safety may be given by this method.

TABLE 4.—*Comparison of the danger involved in per os vaccination with and without beef bile. The total number of animals receiving the first dose of vaccine, with the fatalities resulting from this initial dose, is shown in both cases*

With bile		Without bile	
Number of rabbits	Number of deaths	Number of rabbits	Number of deaths
5	1		
6	3		
		2	1
15	0		
9	5		
10	2		
		6	1
10	3	6	3
10	5		
		6	4
8	4	6	1
10	6	6	1
16	14		
16	5		
115	48	32	11
Per cent fatalities	42		34

There is not must difference in percentage fatality shown in Table 4 between the vaccination by mouth after preparation by means of bile and without the bile. The slight difference is, however, in favor of vaccine without bile. Certain samples of beef bile are in themselves toxic to rabbits in the same doses previously proved to be satisfactory, using other lots. Besredka does not consider that the bile is necessary in case of the Shiga type, since this organism alone is known to produce injury in the large intestine.

SUMMARY

(1) It is pointed out that the method of vaccination by mouth is not new. It was used more than 19 years ago in an effort to produce immunity to the Shiga type of bacillary dysentery. Renewed interest in the problem followed Besredka's experiments, in which he introduced the use of beef bile as an erosive agent, preparing the way for the entrance of the subsequently ingested bacilli into the deeper lying cells of the mucosa which he considered responsible for the local immunity.

(2) A brief review of some of the early work is given, and also of the work done since Besredka's experiments, including a few of the experiments (foreign) on man. These experiments are somewhat contradictory in that at least a part of the animal experiments do not seem to confirm the work of Besredka, while all of the human experiments favor this method of vaccination. The human experiments are, however, too few in number to warrant definite conclusions.

(3) The author's experiments with rabbits (detailed in Tables 1 to 4) show that the greatest protection (70 per cent) was afforded by the subcutaneous method, but that a fair degree of protection (57 per cent) resulted from the vaccination by mouth, and that there was much less danger involved in the use of the latter method. Beef bile is shown not to be necessary in vaccinating by mouth against the Shiga type of bacillary dysentery.

CONCLUSIONS

While the method of vaccinating by mouth against the Shiga type of bacillary dysentery should still be considered in the experimental stage, two facts are evident:

(1) The danger and discomfort are too great to recommend the use of the subcutaneous method of vaccination against the Shiga type of infection.

(2) Since vaccines can be so prepared that no danger nor discomfort follows their ingestion, and since at least some immunity is shown to follow such procedure, vaccination by mouth is apparently worthy of further trial.

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STUDIES ON OXIDATION-REDUCTION

VII. A STUDY OF DICHLORO SUBSTITUTION PRODUCTS OF PHENOL INDOPHENOL

By H. D. Gibbs, Senior Chemist, Barnett Cohen, Chemist, Hygienic Laboratory, United States Public Health Service, and R. K. Cannan, Biochemist, University College, London

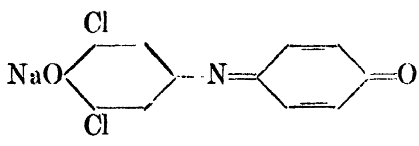
Introduction

In this paper are presented electrometric data on a series of substituted dichloro indophenols which possess properties of possible value in the colorimetric estimation of oxidation-reduction levels. Like the dibromo compounds reported in Paper VI (Reprint No. 915), the dichloro compounds retain their brilliant blue color in mildly acid solutions and are also among the more stable of the indophenols. Moreover, the dichloro compounds are easy to prepare and purify for use.

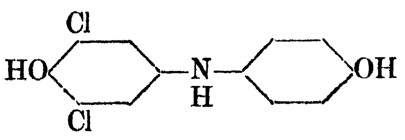
Description of Preparations

The seven preparations investigated in this paper are—

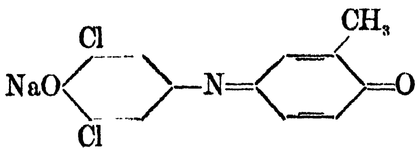
No. 1 (Lab. No. 11)—Phenol indo 2, 6-dichlorophenol:



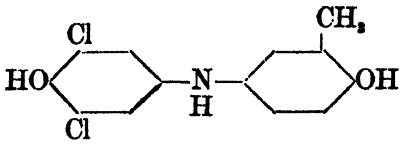
No. 2 (Lab. No. 11a)—Leuco derivative of No. 1:



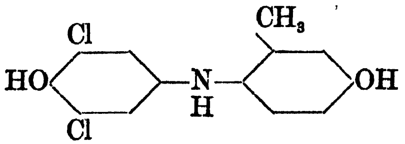
No. 3 (Lab. No. 12)—o-Cresol indo 2, 6-dichlorophenol:



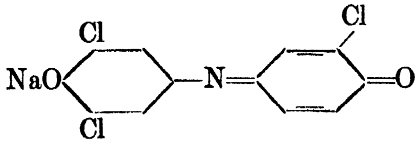
No. 4 (Lab. No. 12a)—Leuco derivative of No. 3:



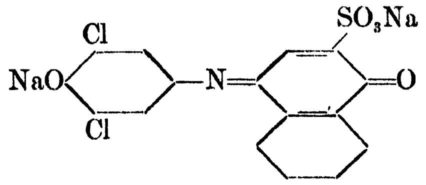
No. 5 (Lab. No. 3a)—Leuco m-cresol indo 2, 6-dichlorophenol:



No. 6 (Lab. No. 14)—o-Chlorophenol indo 2, 6-dichlorophenol:



No. 7 (Lab. No. 15)—1-Naphthol-2-sodium sulphonate indo 2, 6-dichlorophenol (Schäffer's salt indo-2, 6-dichlorophenol):



These will be described briefly, a more complete discussion of the history, chemistry, preparation, and uses of the indophenols being reserved for a future communication.

They were all made by the interaction in alkaline solution of 2, 6-dichloroquinonechloroimide with (No. 1) phenol; (No. 3) o-cresol; (No. 5) m-cresol; (No. 6) o-chlorophenol; and (No. 7) 1-naphthol-2-sodium sulphonate (Schäffer's salt). Nos. 2 and 4 were obtained by the reduction of Nos. 1 and 3, respectively.

The sodium salts of these indophenols were repeatedly purified by solution in water and salting out with sodium chloride. The leuco derivatives were purified by crystallization from dilute ethanol or methanol. Analyses of the compounds are given in Table 1 (at the end of the paper).

From the method of purification of the sodium salts of the indophenols, by salting from solution with sodium chloride, some salt always appears in the purified product. Since this impurity is of no

disadvantage in the employment of the compounds, the method affords the simplest procedure for purification.

The drying of the preparations, since most of them are sensitive to heat, was done at room temperature in a vacuum desiccator with soda lime, and often required weeks. For analytical purposes, the moisture was determined by drying in a Schmiedeberg vacuum apparatus at 100°.

The titanium trichloride titration of many of the compounds leaves much to be desired. In some cases the per cent purity by calculation from the analytical data is checked by the titanium trichloride method. In the majority of the compounds the latter method proved quite unsatisfactory, and in such cases we regard the calculated purity as the more accurate. The titanium reduction method can not be applied uniformly to all these compounds, but must be modified in certain details for each preparation investigated.

The amounts of sodium chloride and of sodium indophenol are calculated from the determinations of sodium and moisture by the method of indirect analysis as follows: The mixture analyzed consists of water, NaCl and Na indophenol. Then

$$\underset{a}{100\% - \%\text{ moisture}} = \underset{x}{\text{per cent NaCl}} + \underset{y}{\text{per cent Na indophenol}}, \text{ or}$$

If we let $m = \dfrac{\text{NaCl (molar wt.)}}{\text{Na indophenol (molar wt.)}}$,

then $x + my = b$, where b is the percentage of NaCl equivalent to the total Na analytically determined. Solving the above equations gives

$$y = \frac{a - b}{1 - m}$$

The purity of the compounds = 100% − NaCl − moisture, except in the case of compound No. 4, which is considered to contain 1 mol. of water of crystallization. The chlorine in organic combination is the difference between the total chlorine and that in the sodium chloride.

The leuco compounds yielded almost ideal analytical results; and electrometric measurements upon them would have been highly desirable. With one exception, however, they were too difficult to handle, owing to their very low rate of solution, even in the alkaline, de-aerated buffers. Attempts to form the more readily soluble sodium salts by mixing with the calculated amounts of de-aerated NaOH resulted apparently in a partial decomposition.

Oxidation-Reduction Electrode Measurements

The electrode potential measurements were made with the equipment described in previous articles of this series, and the procedure

followed was essentially the same as that used with the other indophenols discussed in Papers III, V, and VI. The buffer solutions employed in the present measurements at constant hydrion concentration had the same compositions as those described in Paper V, Table 1. They were measured with the hydrogen electrode in a dilution of 50 c. c. buffer to 5 c. c. water, this being a first approximation to the pH of the dilution of 50 c. c. buffer to 5 c. c. aqueous dye solution[1] actually used in the oxidation-reduction electrode measurements.

The method of titration was used in determining the potential (E'_0) characteristic of a 1:1 mixture of oxidant and reductant at constant hydrion concentration. With leuco indigo disulphonate as a reducing agent, this method gave uniform results in the titration of the oxidized form of the compounds studied (see tables at the end of this paper). On the other hand, the titrations of the leuco derivatives with ferricyanide as oxidizing agent were far from satisfactory. Only one of these compounds, leuco phenol indo 2,6-dichlorophenol yielded stable and consistent electrode potentials. (See Table 4.) The leuco derivatives of the o-cresol and m-cresol substitution compounds behaved unsatisfactorily toward the electrode and were discarded.

The measurements of E'_0 at different pH levels were carried through without difficulty except at each limit of the pH range studied. At the acid limit (near pH 5) the indophenols tend to precipitate; and at the alkaline limit (near pH 11) there is a drift in the electrode potentials to the negative side as if decomposition were occurring. The latter drift was least evident in the case of the simple phenol indo 2,6-dichlorophenol and greatest in the case of the o-chlorophenol derivative.

The electrode equation relating electrode potential to hydrion concentration (the derivation of which has been described in Paper III) is

$$E_h = E_o - 0.03006 \log \frac{[S_r]}{[S_o]} + 0.03006 \log \left[K_r K_2 [H^+] + K_r [H^+]^2 + [H^+]^3 \right] - 0.03006 \log \left[K_o + [H^+] \right], \text{ (at 30° C.)}, \quad (1)$$

Here, E_h is the observed potential, and E_o is the potential when $[H^+]=1$ and the ratio $\frac{[S_r]}{[S_o]}=1$. $[S_r]$ is the concentration of total reductant, and $[S_o]$ the concentration of total oxidant. K_o is the acid dissociation constant of the oxidant, K_r is the dissociation con-

[1] The concentration of the dye solution was in all cases less than 0.006, molar, while that of the buffers was about 0.1 molar.

stant of the hydrogen in the reductant to which K_o applies in the oxidant, and K_2 is the dissociation constant of the phenolic group created by reduction.

The data reported here and plotted in Figure 1 are given for the systems containing oxidant and reductant in equal proportions, i. e., when $\frac{[S_r]}{[S_o]}=1$. In other words, when this ratio is unity in equation (1), E_h is termed E'_o.

In Figure 1 the experimentally determined points are appropriately marked, whereas the curves show the values calculated by means of

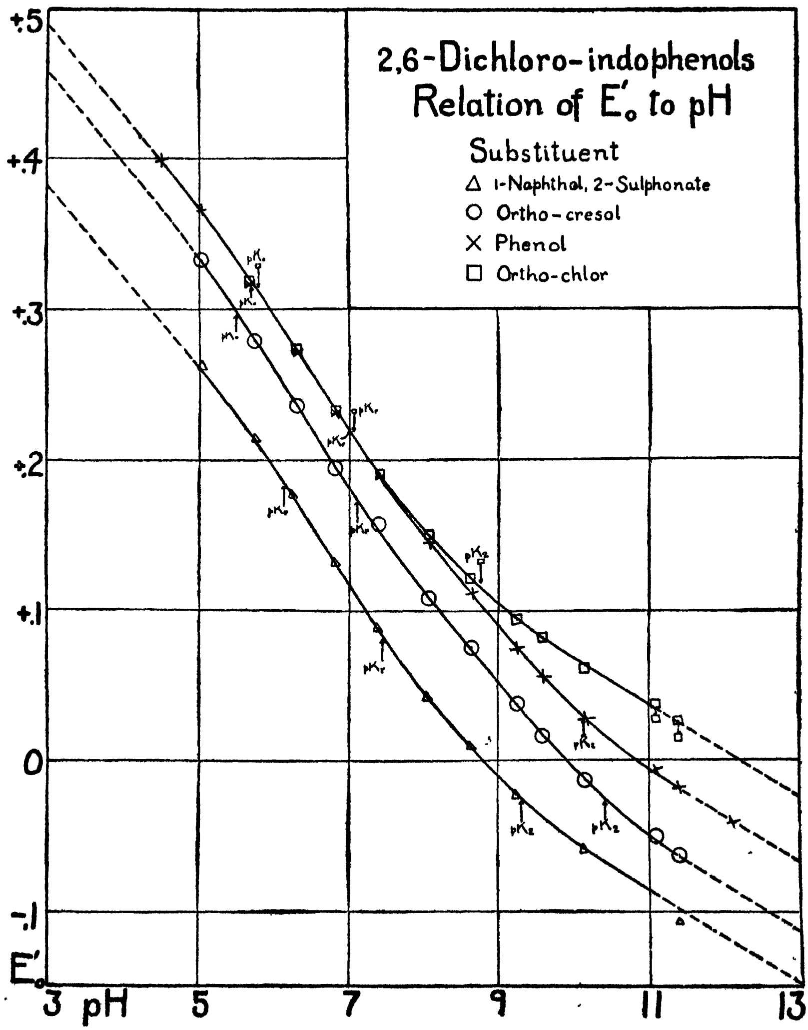


FIG. 1

equation (1). The curves are extended as broken lines in the extremes of acidity and alkalinity where the experimental values are uncertain, for the reasons already indicated. The centers of inflection of these curves were found as previously described and are indicated by arrows.

It will be recalled that the acid dissociation constants, K_o, of the oxidants in the simple indophenols were determined colorimetrically by the method of Salm. These were in good agreement with the corresponding values found by the graphic method. However, in the 2,6-dichloro indophenols the method of Salm gave rather uncertain values for K_o. Thus, in the phenol compound it was found that very dilute solutions gave a pK_o value of 5.5, and more concentrated solutions gave a value nearer 5.8. The presence of a slight water-insoluble residue suggests the possibility of the interference by the color of an impurity. Moreover, the disparity in intensities of the acid and alkaline colors prevents good colorimetric comparisons, and the tendency of the dihalogenated indophenols to precipitate in acid solution introduces a further difficulty.

In this connection, the following comparison is of interest:

Indo 2,6-dichlorophenol Series: Comparison of initial and final pK estimates

Compound No.	Substituent		pK_o	pK_r	pK_2
1	Phenol	initial	5.5–5.85	6.94	10.10
		final	5.70	7.00	10.13
6	o-Chlorophenol	initial	5.5–5.6	6.80	8.80
		final	5.8	7.05	8.75
3	o-Cresol	initial	5.5–5.70	6.98	10.40
		final	5.5	7.10	10.43
7	1-Naphthol-2-sulphonate	initial	5.9–5.95	7.36	9.45
		final	6.11	7.45	9.32

In this table, $pK = \log \frac{1}{K}$. The initial pK_o values were determined colorimetrically as described; and the initial pK_r and pK_2 values were obtained graphically from the chart of the experimental data. The final pK values listed are those which when used in the type equation (1) give the nearest approximation to the experimental values found for E'_o.

It is seen that the initial pK_o values are uncertain and in some cases diverge considerably from the final values. On the other hand, the agreement between initial and final values for pK_r and pK_2 is in most cases very good.

Inspection of Figure 1 discloses the present E'_o : pH curves to be of the same general form as those of the other indophenols reported from this laboratory. It will be noted that the curves for the phenol and o-chlorophenol derivatives are identical in the acid region down

to about pH 7.0, and that the o-chlorophenol curve then diverges to more positive potentials as the alkalinity is increased.

Additional evidence on the effects of substitution in the indophenol nucleus is furnished by the present study. The following tabulation brings out certain interesting comparisons:

Comparison of the constants found in the simple indophenols and the indo 2,6-dichlorophenol series

	E_o	pK_o	pK_r	pK_2
Simple indophenols				
Substituent:				
Phenol	0.649	8.1	9.4	10.6
o-Chlorophenol	.663	7.0	8.4	10.3
o-Cresol	.616	8.4	9.5	10.9
1-Naphthol, 2-sulphonate	.544	8.68	9.10	10.70
Indo 2,6-dichlorophenols				
Substituent:				
Phenol	.668	5.7	7.00	10.13
o-Chlorophenol	.668	5.8	7.05	8.75
o-Cresol	.639	5.5	7.10	10.43
1-Naphthol, 2-sulphonate	.563	6.1	7.45	9.32

In this tabulation we may regard the values of E_o as an approximate index of the relative position of the various systems to each other. It will be noted that the dichloro series is, in general, more positive than the simple indophenol series to the extent of about 10 to 20 millivolts. This was already pointed out in Paper V for the dibromo compounds. The introduction of a naphthol-sulphonic acid group in the molecule shifts each system 0.1 volt to the negative side of the phenol system. (See also Fig. 1.) In the simple indophenol series, the addition of a methyl group produces a system more negative by 0.033 v., and such a substitution in the dichloro series results in a system 0.029 v. more negative. Substitution of o-chlor in the simple indophenol produces a definite positive shift, but this is not apparent in the dichloro indophenol.

Most of the relative shifts in the acid dissociation constants as a result of substitution are different in direction and in magnitude in the two series. A certain uniformity may be pictured in each of the series, but no simple consistent theory seems to account for all of them. The differences found are of such a magnitude as hardly to be accounted for by an effect of possible impurities. The difficulty of interpretation incident to possible effects of tautomerism has already been discussed in the last paper.

A Selection of Indophenols as Oxidation-Reduction Indicators

The main reason for studying the indo 2,6-dichlorophenols and presenting the complete and detailed data lies in the fact that their characteristics make them useful as indicators of oxidation-reduction

intensity in biological systems within physiological ranges of hydrion concentration. This was predicted from the data presented in earlier papers from this laboratory. Certain qualitative observations on the utility of phenol indo 2,6-dibromophenol were reported in Paper VI, and these have been confirmed and amplified by other workers to whom samples of the indicator were furnished (Voegtlin, Johnson, and Dyer, 1924). The analogous 2,6-dichloro compound is more readily made in pure form and has the same desirable properties so that it should prove a useful substitute.

We have, to date, presented more or less complete data on 26 different indophenols. These represent different degrees of desirability as oxidation-reduction indicators. Some are poorly soluble, some are difficult or nearly impossible to purify, and some are relatively unstable. It seems desirable now to select from this list those indophenols that appear to be most suitable as oxidation-reduction indicators in physiological systems under certain restricted conditions that require brief discussion.

(1) *Hydrion concentration.*—The important controlling effect of pH on the oxidation-reduction equilibria of the indophenols has been repeatedly stressed. In Paper VI we have shown how the E'_0: pH curves of some of them cross and recross each other as the pH changes, so that now one system and now another becomes more positive—that is, *the pH must be specified and fairly rigidly maintained if relative oxidation-reduction intensities when measured are to have any significance.* For purposes of exposition, we have arbitrarily selected pH 7.0 as the hydrion concentration at which the various indophenols are to be compared. A similar system can be worked out for any other pH from our published data.

(2) *Color changes of the indophenols.*—These compounds show two kinds of color change. One is the ordinary acid-base indicator change—a rather pale reddish color in acid and an intense blue in alkaline ranges. The other is the oxidation-reduction change from the color of the oxidant (red or blue) to that of the reductant (practically colorless). This is the color change in which we are now interested. Electrometrically, this change can be measured from 0 to 100 per cent transformation, but *visually* only within a small range (near the zone of complete decolorization) can the degree of transformation be differentiated sufficiently well for colorimetric comparison. In solutions of a concentration around 0.001 molar, we have found the eye readily able to pick out color distinctions in the zone between 70 and 95 per cent reduction (decolorization). These limits may be extended somewhat by the use of colorimeters and of more dilute indicator solutions.

This imposes a rather heavy handicap, since more compounds will be required to cover a given range of reduction potential than would be necessary if visual perception of decoloration were more effective.

(3) *Stability of the indophenols.*—We have pointed out that these compounds are in some cases not very stable. In general, they should not be exposed to extremes of acidity or alkalinity, to elevated temperatures, or to unrestricted contact with air. Solutions of these compounds also appear to be rapidly affected by strong sunlight.

The table below gives a useful survey of the selected indophenols. The electrode potentials listed after each compound were calculated for pH 7.0 and are not applicable for any other hydrion concentration. The compounds marked with an asterisk (*) are least desirable, because of poor solubility or low stability, but they cover ranges not covered by other compounds.

Some selected indophenols: Electrode potentials at pH 7.0 at 50, 70, and 95 per cent reduction

Indophenol	E_h (at per cent reduction indicated)		
	50 per cent (E'_0)	70 per cent	95 per cent
1-Naphthol, 2-sulphonate indo 2, 6-dichlorophenol †	+0.1186	0.1075	0.0767
1-Naphthol, 2-sulphonate indophenol	+.1230	.1119	.0811
*Thymol indophenol and *carvacrol indophenol	+.1713	.1602	.1294
o-Cresol indo 2, 6-dichlorophenol	+.1806	.1695	.1387
o-Cresol indophenol	+.1947	.1836	.1528
*m-Cresol indophenol	+.2104	.1993	.1685
Phenol indo 2, 6-dichlorophenol † and the dibromo compound	+.2169	.2058	.1750
o-Chlorophenol indo 2, 6-dichlorophenol	+.2191	.2080	.1772
Phenol indophenol	+.2276	.2165	.1857
o-Bromo phenol indophenol	+.2306	.2195	.1887
o-Chlorophenol indophenol †	+.2333	.2222	.1914
*m-Bromophenol indophenol †	+.2475	.2364	.2056

† The percentage reduction curves of these compounds are shown in Figure 2.
* Of low stability or solubility.

In Figure 2 we have plotted the curves for five of the compounds, the curves being shaded in the zone 70–95 per cent reduction. The above table and the chart make clear the limitations to which we have alluded.

In biochemical application, one indophenol from each extreme of the limited potential scale may be used in preliminary work. If there then appears need for determining the potential more definitely, the other intermediate indophenols may be applied. It should be emphasized that we have left out of consideration a variety of factors (such as incidental presence of air, colloids, catalysts, etc.), that in any particular experiment might produce conditions of a peculiar nature and results that would have to be interpreted with caution. Our present discussion has dealt only with simple, general aspects of the use of the indophenols as indicators of oxidation-reduction.

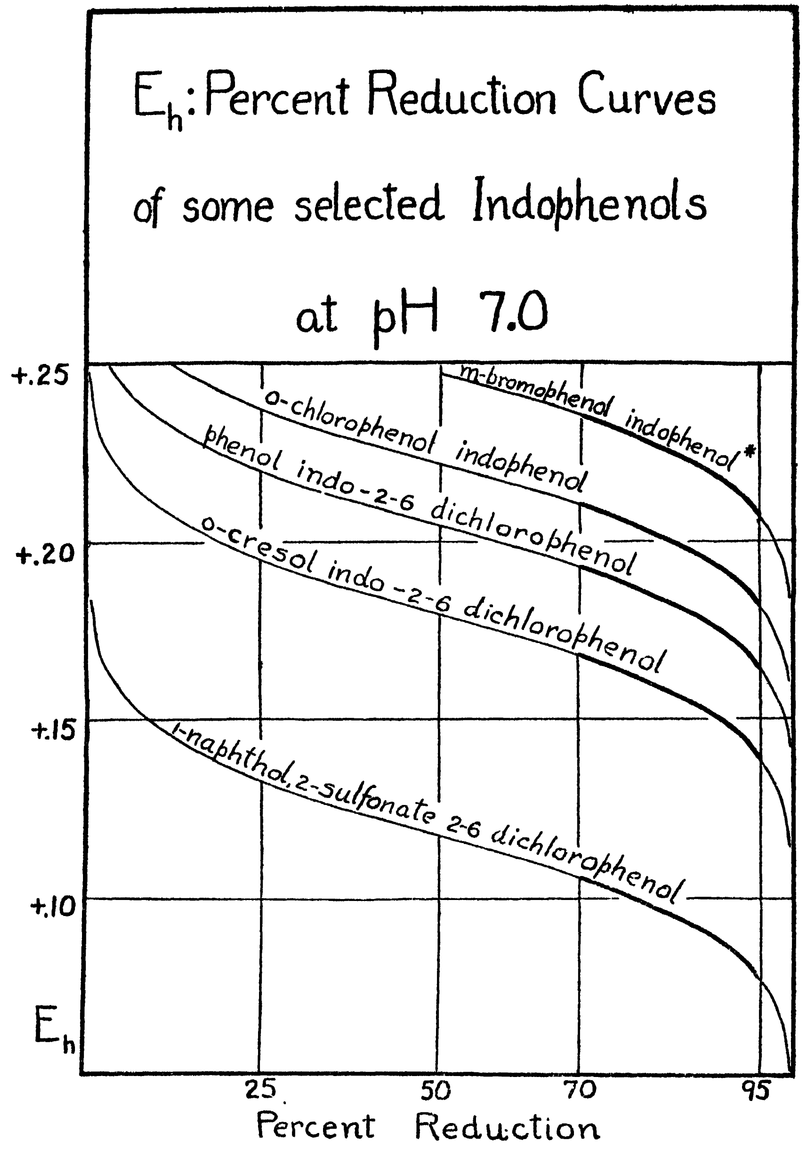


FIG. 2

Summary

Complete data are presented on the equilibrium potentials found with mixtures of oxidant and reductant of the following indophenols: phenol indo 2, 6-dichlorophenol; o-chlorophenol indo 2, 6-dichlorophenol; o-cresol indo 2, 6-dichlorophenol; and l-naphthol, 2-sulfonate indo 2, 6-dichlorophenol.

These compounds have been compared with substituted simple indophenols and found to show interesting analogies and differences.

The complete data on all indophenols reported from this laboratory have been reviewed, and a selection is presented of the compounds most likely to prove useful in measurement of oxidation-reduction potentials between approximately +0.07 and +0.24 volts at pH 7.0.

Acknowledgment.—We are indebted to Chemist E. Elvove and Assistant Chemist C. G. Remsburg of this Laboratory for most of the chemical analyses of our compounds.

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TABLE 1.—*Analyses (on moist basis) of the seven indophenols described in this paper*

	Compound and number						
	Phenol indo 2, 6-dichlorophenol (1)	Leuco phenol indo 2, 6-dichlorophenol (2)	o-Cresol indo 2, 6-dichlorophenol (3)	Leuco o-cresol indo 2, 6-dichlorophenol $\cdot H_2O$ (4)	Leuco m-cresol indo 2, 6-dichlorophenol (5)	o-Chlorophenol indo 2, 6-dichlorophenol (6)	1-Naphthol, 2-sulphonate indo 2, 6-dichlorophenol [2](7)
Moisture	11.10	0.0	7.36	[1] 6.20	0.0	17 03	11.28
Nitrogen	3.58	4.97; 4.94	3.01	4.88	4.77; 4 88	3.40	2.70
Chlorine	27 56	26 96; 26.86	----	23 83	24.39; 24.57	27.97	----
Sodium	12.09	0.0	12.44	0 0	0.0	6.89	10.71
NaCl (calculated)	16 03	0.0	17 11	0.0	0.0	3.14	5.20
Cl in organic combination (calculated)	17.86	26 96; 26 86	----	23.83	24.39; 24.57	26.20	----
Indophenol by calculation	72 95	100.0	75.50	100.0	100.0	79.82	83.52
Indophenol by $TiCl_3$ titration	79.6	----	71.2	----	----	80 21	85.46

[1] Theory for $1H_2O$=5.96 %.
[2] Sulphur, 6.17%.

In the following comparisons of analysis and theoretical composition, the pure sodium salts of the indophenols are considered to be the residue after subtracting the moisture and the salt. The analyses justify these assumptions

		1	2	3	4	5	6	7
N	Theory	4 83	5.18	4 60	4 63	4.93	4.32	3.15
	Found	4 91	4.96	4.78	4 88	4 83	4.26	3.23
Cl	Theory	24 48	26.29	----	23 52	25 00	32.83	----
	Found	24.48	26.91	----	23.83	24.48	32 83	----
S	Theory	----	----	----	----	----	----	7.21
	Found	----	----	----	----	----	----	7.39
Water	Theory	----	----	----	(1)	----	----	----
	Found	----	----	----	(1)	----	----	----

[1] Theory for 1 mol. H_2O, 5.96%; found, 6.20%

TABLE 2.—*Phenol indo 2, 6-dichlorophenol: Relation of E'_0 to pH*

[E_0=0 6684, $K_0=2\times10^{-6}$, $K_r=1\times10^{-7}$, $K_2=7$ 4×10^{-11}]

Solution No.	pH	E'_0 calculated	E'_0 observed	Deviation
13	6.311	0.2701	0.2708	+0.0007
15	6 822	.2302	.2315	+.0013
16	7 411	.1878	.1880	+.0002
20	8.068	.1454	.1446	−.0008
22	8.635	.1108	.1108	.0000
23	9.251	.0748	.0741	−.0007
23½	9.601	.0555	.0557	+.0002
24	10.158	+.0281	+.0279	−.0002
25	11.102	−.0076	−.0069	+.0007
26	11.398	−.0172	−.0181	−.0009

Table 3.—*Phenol indo, 2, 6–dichlorophenol titrated with leuco indigo disulphonate at pH 8.628*

Indigo (c. c.)	Reduction (per cent)	0.03006 log $\frac{[S_r]}{[S_o]}$	E_h	E'_o	E'_o corrected (β)*	Deviation from 0.1112
1	4. 83	−0. 0389	+0. 1500	+0. 1111	+0. 1112	0. 0000
2	9. 66	−. 0292	. 1402	. 1110	. 1112	. 0000
3	14. 49	−. 0232	. 1340	. 1108	. 1111	−. 0001
4	19 32	−. 0187	. 1295	. 1108	. 1111	−. 0001
5.02	24 25	−. 0149	. 1255	. 1106	. 1110	−. 0002
6	28. 98	−. 0117	. 1223	. 1106	. 1111	−. 0001
7	33. 82	−. 0088	. 1194	. 1106	. 1112	. 0000
8	38. 65	−. 0060	. 1166	. 1106	. 1112	. 0000
9	43. 48	−. 0034	. 1139	. 1105	. 1112	. 0000
10	48 31	−. 0009	. 1113	. 1104	. 1112	. 0000
11	53. 14	+. 0016	. 1088	. 1102	. 1111	−. 0001
12	57 97	. 0042	. 1060	. 1102	. 1112	. 0000
13	62. 80	. 0068	. 1033	. 1101	. 1111	−. 0001
14	67 64	. 0096	. 1004	. 1100	. 1111	−. 0001
15	72. 47	. 0126	. 0974	. 1100	. 1112	. 0000
16	77 30	. 0160	. 0940	. 1100	. 1112	. 0000
17	82. 13	. 0199	. 0899	. 1098	. 1112	. 0000
18	86. 96	. 0248	. 0849	. 1097	. 1111	−. 0001
19	91 79	. 0315	. 0780	. 1095	. 1110	−. 0002
20	96. 62	. 0439	. 0660	. 1099	. 1115	+. 0003
20.7	100 00					

* The (β) correction is a correction derived by a graphic method described in Paper VI.

Table 4.—*Leuco phenol indo 2, 6–dichlorophenol titrated with K_3FeCy_6 at pH 8.626*

K_3FeCy_6 (c. c.)	Oxidation (per cent)	0 03006 log $\frac{[S_r]}{[S_o]}$	E_h	E_h corrected (α)*	E'_o	Deviation from 0.1112
1	5 26	+0 0377	+0 0724	+0 0723	+0 1100	−0 0012
2	10. 53	. 0279	. 0827	. 0824	. 1103	−. 0009
3	15 79	. 0218	. 0894	. 0890	. 1108	−. 0004
4	21. 05	0173	. 0945	. 0938	. 1111	−. 0001
5	26. 32	. 0134	. 0985	. 0977	. 1111	− 0001
6	31 58	. 0101	. 1023	1013	. 1114	+. 0002
7	36 84	. 0070	. 1055	. 1043	. 1113	+. 0001
8	42 10	0041	. 1087	. 1074	. 1115	+ 0003
9	47. 37	+. 0014	. 1115	. 1101	. 1115	+. 0003
10	52. 63	−. 0014	. 1145	. 1129	. 1115	+. 0003
11	57 90	−. 0041	. 1174	. 1157	. 1116	+. 0004
12	63. 16	− 0070	. 1204	. 1185	. 1115	+. 0003
13	68 43	−. 0101	. 1237	. 1217	. 1116	+. 0004
14	73. 69	−. 0134	. 1272	. 1251	. 1117	+ 0005
15	78 95	−. 0173	. 1311	. 1289	. 1116	+. 0004
16	84. 21	− 0218	. 1359	. 1335	. 1117	+. 0005
17	89 47	− 0279	. 1423	. 1397	. 1118	+. 0006
18	94. 74	− 0377	. 1523	. 1496	. 1119	+. 0007
19	100 00					

*The (α) correction (determined experimentally) adjusts for the acidity changes caused by the formation of HK_3FeCy_6 with increasing amounts of K_3FeCy_6 Application of the (β) correction, in addition, results in practically uniform E'_o values of 0 1112.

Table 5.—*o-Cresol indo 2, 6-dichlorophenol: Relation of E'_o to pH*

[E_o=0 6394; K_o=3.2×10^{-6}; K_r=8×10^{-8}, K_2=3.7×10^{-11}]

Solution No.	pH	E'_o calculated	E'_o observed	Deviation
12	5. 752	0. 2807	0. 2782	(−0. 0025)
13	6. 311	. 2356	. 2354	−. 0002
15	6. 822	. 1943	. 1943	. 0000
16	7 411	. 1507	. 1507	. 0000
20	8. 068	. 1075	. 1075	. 0000
22	8. 635	. 0727	. 0745	+. 0018
23	9. 251	. 0360	. 0364	+. 0004
23½	9. 601	+. 0159	. 0158	−. 0001
24	10. 158	−. 0139	−. 0140	−. 0001
25	11. 102	−. 0535	−. 0505	+. 0030
26	11. 398	−. 0636	−. 0632	+. 0004

TABLE 6.—*o-Cresol indo 2, 6-dichlorophenol titrated with leuco indigo disulphonate at pH 8.628*

Indigo (c. c.)	Reduction (per cent)	0.03006 log $\frac{[S_r]}{[S_o]}$	E_h	E'_o	Deviation from 0.0749
2	12.50	−0.0254	+0.1002	+0.0748	−0.0001
2.90	18.12	−.0197	.0948	.0751	+.0002
4	25.00	−.0143	.0894	.0751	+.0002
5	31.25	−.0103	.0851	.0748	−.0001
6	37.50	−.0067	.0816	.0749	.0000
7	43.75	−.0033	.0782	.0749	.0000
8	50.00	.0000	.0748	.0748	−.0001
9	56.25	+.0033	.0714	.0747	−.0002
10	62.50	.0067	.0680	.9747	−.0002
11	68.75	.0103	.0645	.0748	−.0001
12	75.00	.0143	.0605	.0748	−.0001
13	81.25	.0192	.0557	.0749	.0000
14	87.50	.0254	.0495	.0749	.0000
15	93.75	.0354	.0399	(.0753)	(+.0004)
16	100.00				

TABLE 7.—*o-Chlorophenol indo 2, 6-dichlorophenol: Relation of E'_o to pH*

[E_0=0.0684; K_0=1.6×10⁻⁶; K_r=9×10⁻⁸; K_2=1.8×10⁻⁹]

Solution No.	pH	E'_o calculated	E'_o observed	Deviation
12	5.681	(0.3202)	(.3181)	(−0.0021)
13	6.311	.2724	.2727	+.0003
15	6.822	.2326	.2325	−.0001
16	7 411	.1903	.1901	−.0002
20	8.068	.1494	.1496	+.0002
22	8.635	.1196	.1219	+.0023
23	9.251	.0936	.0941	+.0005
23½	9.601	.0813	.0811	−.0002
24	10 158	.0633	.0609	−.0024
25	11.102	(.0345)	(.0369)	(+.0024)
26	11.398	(.0256)	(.0247)	(−.0009)

TABLE 8.—*o-Chlorophenol indo 2, 6-dichlorophenol titrated with leuco indigo disulphonate at pH 8.628*

Indigo (c. c.)	Reduction (per cent)	0.03006 log $\frac{[S_r]}{[S_o]}$	E_h	E'_o	Deviation from 0.1223
2	7.04	−0 0337	+0.1560	+0 1223	0.0000
3	10.56	− 0279	.1505	.1226	+.0003
4	14.08	−.0236	.1462	.1226	+.0003
5	17.60	−.0202	.1426	.1224	+.0001
6	21 13	− 0172	.1395	.1223	.0000
7	24 65	−.0146	.1369	.1223	.0000
8	28 17	− 0122	.1345	.1223	.0000
9	31.69	− 0100	.1323	.1223	.0000
10	35.21	−.0080	.1303	.1223	.0000
11	38.73	−.0060	.1283	.1223	.0000
12	42 25	−.0041	.1263	.1222	−.0001
13	45.78	−.0022	.1245	.1223	.0000
14	49.30	−.0004	.1227	.1223	.0000
15	52.82	+.0015	.1209	.1224	+.0001
16	56.34	.0033	.1192	.1225	+.0002
17	59.86	.0052	.1170	.1222	−.0001
18	63.38	.0072	.1151	.1223	.0000
19	66 90	.0092	.1131	.1223	.0000
20	70.42	.0113	.1109	.1222	−.0001
21	73.94	.0136	.1087	.1223	.0000
22	77.46	.0161	.1062	.1223	.0000
23	80.98	.0189	.1033	.1222	−.0001
24	84.50	.0221	.1002	.1223	.0000
25	88.03	.0261	.0962	.1223	.0000
26	91.55	.0311	.0914	.1225	+.0002
27	95.07	.0386	.0840	.1226	+.0003
28.4	100.00				

TABLE 9.—*1-Naphthol-2-sulphonate indo 2, 6-dichlorophenol: Relation of E'_0 to pH*

[E_0=0.5630; K_0=7.245×10^{-7}; K_r=3.549×10^{-8}; K_2=4.787×10^{-10}]

Solution No.	pH	E'_0 calculated	E'_0 observed	Deviation
9	5.044	0.2588	(0 2627)	(+0.0039)
12	5.752	.2130	.2133	+.0003
13	6.255	.1769	.1764	−.0005
15	6.822	.1327	.1314	−.0013
16	7.404	.0876	.0876	0000
20	8 058	.0424	.0416	−.0008
22	8 633	+.0077	+.0086	+.0009
23	9.246	−.0242	−.0235	+.0007
24	10.144	−.0597	−.0595	+.0002
26	11.398	−.0991	(−.1033)	(−.0072)

TABLE 10.—*1-Naphthol-2-sulphonate indo 2, 6-dichlorophenol titrated with leuco indigo disulphonate at pH 8.628*

Indigo (c. c)	Reduction (per cent)	0 03006 log $\frac{[S_r]}{[S_o]}$	E_h	E_o'	Deviation from 0.0089
1	5 21	−0.0378	+0 0483	(+0.0105)	+0.0016
2	10 47	−.0280	.0373	.0093	+0.0004
3	15 71	−.0219	0309	.0090	+ 0001
4	20 94	−.0174	0264	.0090	+.0001
5	26 18	−.0135	0224	.0089	.0000
6	31 41	−.0102	.0191	.0089	.0000
7	36 65	−.0071	.0159	.0088	−.0001
8	41.89	−.0043	.0128	.0085	−.0004
9	47.12	−.0015	.0103	.0088	−.0001
10	52 36	+.0012	0076	.0088	−.0001
11	57.60	.0040	.0051	.0091	+.0002
12	62.83	.0068	+.0024	.0092	+.0003
14	73.30	.0132	−.0040	.0092	+.0003
16	83.77	.0214	−.0125	.0089	.0000
18	94.24	.0365	− 0279	0086	−.0003
19.1	100.00				

NEW YORK LAW REGARDING THE MAKING AND REPORTING OF SMALLPOX VACCINATIONS

A 1924 New York law (chapter 25) amends section 311 of chapter 45 of the consolidated laws. The section of the public health law amended relates to the making and reporting of smallpox vaccinations and, as amended, reads as follows:

SEC. 311. *Vaccination how made; reports.*—1. No person shall perform vaccination for the prevention of smallpox who is not a regularly licensed physician under the laws of the State. Vaccination shall be performed in such manner only as shall be prescribed by the State commissioner of health.

2. No physician shall use vaccine virus for the prevention of smallpox unless such vaccine virus is produced under license issued by the Secretary of the Treasury of the United States and is accompanied by a certificate of approval by the State commissioner of health, and such vaccine virus shall then be used only within the period of time specified in such approval.

3. Every physician performing a vaccination shall within 10 days make a report to the local health officer upon a form furnished by the State commissioner of health setting forth the full name and age of the person vaccinated and, if such person is a minor, the name and address of his parents, the date of vaccination, the date of previous successful vaccination if possible, the name of the

maker of the vaccine virus, the lot or batch number of such vaccine virus and whether upon re-examination after a proper interval such vaccination was found to be successful or nonsuccessful.

4. Every local health officer shall retain in the files and records of his office every report of a vaccination reported to him under the provisions of the preceding paragraph and shall report once in each month to the State department of health the number of vaccinations reported to him during the preceding month, together with the number of those which were successful and the number unsuccessful. Such report shall be made in such manner as shall be prescribed by the State commissioner of health.

DEATHS DURING WEEK ENDED MARCH 21, 1925

Summary of information received by telegraph from industrial insurance companies for week ended March 21, 1925, and corresponding week of 1924. (From the Weekly Health Index, March 24, 1925, issued by the Bureau of the Census, Department of Commerce.)

	Week ended Mar. 21, 1925	Corresponding week, 1924
Policies in force	59, 070, 177	55, 349, 359
Number of death claims	12, 743	11, 567
Death claims per 1,000 policies in force, annual rate	11. 2	10. 9

Deaths from all causes in certain large cities of the United States during the week ended March 21, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, March 24, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Mar. 21, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate week ended Mar 21, 1925 [2]
	Total deaths	Death rate [1]		Week ended Mar 21, 1925	Corresponding week, 1924	
Total (64 cities)	7, 866	14. 9	[3] 14. 5	961	[3] 946	
Akron	51			9	2	99
Albany [4]	55	24 0	15 0	1	1	22
Atlanta	66	14. 8	24 3	6	9	
Baltimore [4]	308	20. 2	15. 4	33	26	96
Birmingham	82	20. 8	20. 5	7	13	
Boston	265	17. 6	15. 2	36	29	95
Bridgeport	36			1	2	16
Buffalo	167	15. 7	13. 6	28	21	114
Cambridge	22	10. 2	14. 0	1	6	17
Camden	40	16. 2	12. 4	4	2	66
Chicago [4]	819	14 3	12. 8	107	81	95
Cincinnati	162	20. 6	16. 4	21	12	124
Cleveland	218	12. 1	11. 7	37	26	92
Columbus	92	17. 5	15. 9	9	12	85
Dallas	32	8 6	15. 3	4	8	
Dayton	53	16. 0	10. 5	5	3	80
Denver	79			8	9	
Des Moines	34	11. 9	12. 2	3	8	51
Detroit	331			58	47	98
Duluth	25	11. 8	9. 1	1	0	21
Erie	28			3	5	59
Fall River [4]	37	15. 9	19. 8	11	11	158
Flint	17			4	4	66
Fort Worth	25	8. 6	8. 8	2	1	
Grand Rapids	35	12. 1	10. 9	5	6	78

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on death under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 63 cities.
[4] Deaths for week ended Friday, Mar. 20, 1925.

Deaths from all causes in certain large cities of the United States during the week ended March 21, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, March 24, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Mar. 21, 1925: Total deaths	Week ended Mar. 21, 1925: Death rate	Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year: Week ended Mar. 21, 1925	Deaths under 1 year: Corresponding week, 1924	Infant mortality rate week ended Mar. 21, 1925
Houston	46			1	3	
Indianapolis	114	16.6	19.9	10	18	69
Jacksonville, Fla	41	20.4	20.4	7	3	156
Jersey City	84	13.9	16.0	12	17	84
Kansas City, Kans	38	16.0	16.3	8	4	169
Kansas City, Mo	149	21.1	17.8	23	17	
Los Angeles	258			23	25	64
Louisville	104	20.9	18.2	13	11	114
Lowell	40	17.9	17.1	9	8	156
Lynn	25	12.5	11.6	2	3	53
Memphis	84	25.1	16.3	8	6	
Milwaukee	133	13.8	9.9	30	14	137
Minneapolis	127	15.6	12.6	18	13	96
Nashville [4]	30	12.6	24.5	1	6	
New Bedford	23	8.9	13.0	6	8	100
New Haven	57	16.6	14.5	5	6	65
New Orleans	146	18.4	19.2	15	6	
New York	1,581	13.5	13.7	204	222	81
Bronx Borough	179	10.3	11.7	15	19	52
Brooklyn Borough	527	12.3	12.9	59	76	62
Manhattan Borough	693	16.0	15.7	108	105	108
Queens Borough	143	13.0	10.6	20	17	90
Richmond Borough	39	15.2	16.4	2	5	36
Newark, N. J	132	15.2	12.9	16	14	73
Norfolk	34	10.5	7.6	6	2	107
Oakland	55	11.3	10.8	3	7	35
Oklahoma City	30	14.6	12.0	4	1	
Omaha	69	17.0	13.8	5	9	48
Paterson	31	11.4	14.1	7	6	117
Philadelphia	535	14.1	15.1	66	74	83
Pittsburgh	268	22.1	23.4	32	42	112
Portland, Oreg	70	12.9	12.4	5	8	52
Providence	61	13.0	17.5	10	10	80
Richmond	39	10.9	15.0	2	5	24
Rochester	80	12.6		9		71
St. Louis	246	15.6	16.4	13	15	
St. Paul	71	15.0	13.7	6	11	51
Salt Lake City [4]	34	13.5	18.7	3	3	47
San Antonio	57	15.0	19.6	9	15	
San Francisco	154	14.4	14.5	9	8	52
Schenectady	21	10.7	11.4	5	3	141
Seattle	67			4	7	41
Somerville	21	10.7	11.4	2	2	54
Spokane	26			2	0	44
Springfield, Mass	49	16.7	9.8	5	5	74
Syracuse	60	16.3	8.0	3	3	38
Tacoma	22	11.0	13.2	0	5	0
Toledo	73	13.2	12.6	9	9	81
Trenton	34	13.4	16.1	5	10	81
Washington, D. C	150	15.7	17.1	11	21	62
Waterbury	28			5	1	111
Wilmington, Del	33	14.1	12.2	3	2	68
Worcester	53	13.9	13.1	7	6	81
Yonkers	32	14.9	9.5	7	4	154
Youngstown	39	12.7	15.8	7	9	89

[4] Deaths for week ended Friday, Mar. 20, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended March 28, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	3
Chicken pox	59
Diphtheria	21
Dysentery	2
Influenza	552
Malaria	24
Measles	59
Mumps	39
Ophthalmia neonatorum	2
Pellagra	15
Pneumonia	207
Poliomyelitis	2
Scarlet fever	28
Smallpox	180
Tetanus	5
Tuberculosis	101
Typhoid fever	25
Whooping cough	10

ARIZONA

	Cases
Chicken pox	20
Diphtheria	2
Measles	28
Pneumonia	1
Scarlet fever	10
Tuberculosis	2
Typhoid fever	1
Whooping cough	1

ARKANSAS

	Cases
Chicken pox	23
Diphtheria	7
Hookworm disease	2
Influenza	342
Malaria	32
Measles	28

ARKANSAS—continued

	Cases
Mumps	24
Pellagra	13
Scarlet fever	4
Smallpox	2
Trachoma	1
Tuberculosis	18
Typhoid fever	2
Whooping cough	15

CALIFORNIA

	Cases
Cerebrospinal meningitis:	
Fresno	1
Los Angeles	1
Los Angeles County	1
Diphtheria	128
Influenza	149
Measles	103
Poliomyelitis:	
Alameda	1
Berkeley	2
Oakland	1
Lethargic encephalitis:	
Bakersfield	1
San Francisco	1
Rocky Mountain spotted fever—Lassen County	1
Scarlet fever	172
Smallpox:	
Grass Valley	25
Los Angeles	34
Los Angeles County	17
Oakland	13
San Diego	28
San Francisco	9
Scattering	44
Typhoid fever	9

COLORADO

(Exclusive of Denver)	Cases
Chicken pox	8
Diphtheria	5
Influenza	21
Mumps	2
Pneumonia	10
Scarlet fever	16
Tuberculosis	24

CONNECTICUT

Chicken pox	80
Conjunctivitis (infectious)	1
Diphtheria	38
German measles	42
Influenza	16
Lethargic encephalitis	3
Measles	173
Mumps	98
Paratyphoid fever	1
Pneumonia (all forms)	100
Scarlet fever	135
Septic sore throat	6
Trachoma	1
Tuberculosis (all forms)	23
Typhoid fever	1
Whooping cough	81

DELAWARE

Diphtheria	4
Influenza	9
Malaria	4
Measles	3
Mumps	4
Pneumonia	7
Scarlet fever	3
Tuberculosis	2

FLORIDA

Chicken pox	11
Diphtheria	18
Influenza	4
Lethargic encephalitis	1
Malaria	18
Measles	7
Mumps	62
Pneumonia	1
Scarlet fever	3
Smallpox	13
Tuberculosis	16
Typhoid fever	6
Whooping cough	11

GEORGIA

Chicken pox	56
Conjunctivitis (infectious)	2
Diphtheria	12
Dysentery	2
Hookworm disease	3
Influenza	784
Malaria	28
Measles	15
Mumps	116
Pellagra	6
Pneumonia	89
Scarlet fever	2
Septic sore throat	9

GEORGIA—continued	Cases
Smallpox	8
Tuberculosis	18
Typhoid fever	11
Whooping cough	37

ILLINOIS

Cerebrospinal meningitis:	
Cook County	1
La Salle County	1
Peoria County	1
Diphtheria:	
Cook County	71
Scattering	36
Influenza	155
Lethargic encephalitis.	
Henderson County	1
Macoupin County	1
Williamson County	1
Measles	1,225
Pneumonia	398
Scarlet fever:	
Cook County	350
Kane County	13
Kankakee County	13
Knox County	10
St Clair County	10
Sangamon County	22
Scattering	113
Smallpox	
Ogle County	8
Shelby County	13
Scattering	41
Tuberculosis	398
Typhoid fever	26
Whooping cough	264

INDIANA

Chicken pox	54
Diphtheria	22
Influenza	164
Measles	122
Mumps	8
Ophthalmia neonatorum	4
Pneumonia	23
Scarlet fever	
Allen County	8
Cass County	8
Clark County	9
Clay County	10
Elkhart County	17
Fulton County	20
Huntington County	20
La Porte County	11
Marshall County	13
Parke County	11
Starke County	11
St. Joseph County	27
Vanderburgh County	17
Vigo County	10
Scattering	76
Smallpox.	
Carroll County	15
Marion County	25
Scattering	61
Tuberculosis	39
Typhoid fever	5
Whooping cough	32

IOWA

	Cases
Diphtheria	7
Scarlet fever	37
Smallpox	12

KANSAS

Cerebrospinal meningitis	3
Chicken pox	96
Diphtheria	24
German measles	2
Influenza	106
Measles	8
Mumps	523
Pellagra	1
Pneumonia	59
Scarlet fever	101
Septic sore throat	1
Smallpox	12
Trachoma	2
Tuberculosis	78
Whooping cough	24

LOUISIANA

Anthrax	1
Diphtheria	16
Hookworm disease	12
Influenza	113
Leprosy	1
Lethargic encephalitis	1
Malaria	11
Pellagra	6
Pneumonia	25
Scarlet fever	12
Smallpox	49
Tuberculosis	34
Typhoid fever	14

MAINE

Chicken pox	31
Diphtheria	4
Dysentery	2
German measles	2
Influenza	260
Measles	8
Mumps	73
Pneumonia	18
Scarlet fever	50
Septic sore throat	6
Tuberculosis	1
Typhoid fever	2
Vincent's angina	3
Whooping cough	3

MARYLAND [1]

Cerebrospinal meningitis	1
Chicken pox	83
Diphtheria	31
Dysentery	2
German measles	2
Influenza	57
Lethargic encephalitis	1
Measles	32
Mumps	74
Pneumonia (all forms)	144
Scarlet fever	70
Septic sore throat	4

[1] Week ended Friday.

MARYLAND—continued

	Cases
Smallpox	1
Tuberculosis	59
Typhoid fever	10
Whooping cough	109

MASSACHUSETTS

Cerebrospinal meningitis	5
Chicken pox	143
Conjunctivitis (suppurative)	15
Diphtheria	76
German measles	255
Influenza	72
Measles	675
Mumps	52
Ophthalmia neonatorum	33
Pneumonia (lobar)	177
Poliomyelitis	3
Scarlet fever	355
Septic sore throat	1
Tetanus	2
Trachoma	3
Trichinosis	1
Tuberculosis (all forms)	175
Typhoid fever	16
Whooping cough	168

MICHIGAN

Diphtheria	101
Measles	199
Pneumonia	193
Scarlet fever	413
Smallpox	20
Tuberculosis	55
Typhoid fever	7
Whooping cough	106

MINNESOTA

Cerebrospinal meningitis	1
Chicken pox	142
Diphtheria	74
Influenza	2
Lethargic encephalitis	2
Measles	36
Pneumonia	8
Poliomyelitis	3
Scarlet fever	262
Smallpox	19
Tuberculosis	94
Typhoid fever	3
Whooping cough	14

MISSISSIPPI

Diphtheria	15
Influenza	135
Scarlet fever	2
Smallpox	31
Typhoid fever	9

MISSOURI

Cerebrospinal meningitis	1
Chicken pox	64
Diphtheria	70
Influenza	41
Measles	15
Mumps	40

MISSOURI—continued

	Cases
Pneumonia	53
Poliomyelitis	1
Rabies	1
Scarlet fever	174
Smallpox	11
Trachoma	3
Tuberculosis	63
Typhoid fever	5
Whooping cough	25

MONTANA

Chicken pox	6
Diphtheria	9
German measles	78
Influenza	1
Measles	26
Mumps	37
Scarlet fever	32
Smallpox	9
Tuberculosis	10
Whooping cough	4

NEBRASKA

Chicken pox	12
Diphtheria	2
Influenza	49
Measles	8
Mumps	7
Scarlet fever	24
Smallpox	4
Whooping cough	3

NEW JERSEY

Anthrax	1
Cerebrospinal meningitis	1
Chicken pox	145
Diphtheria	89
Influenza	39
Measles	295
Pneumonia	167
Poliomyelitis	2
Scarlet fever	344
Smallpox	8
Trachoma	1
Trichinosis	1
Typhoid fever	7
Whooping cough	295

NEW MEXICO

Chicken pox	30
Diphtheria	4
Influenza	25
Measles	35
Mumps	36
Pneumonia	7
Scarlet fever	19
Tuberculosis	33
Typhoid fever	1
Whooping cough	10

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	1
Diphtheria	106
Influenza	243
Lethargic encephalitis	3

[1] Deaths.

NEW YORK—continued

	Cases
Measles	531
Pneumonia	466
Scarlet fever	409
Smallpox	3
Typhoid fever	13
Whooping cough	279

NORTH CAROLINA

Cerebrospinal meningitis	2
Chicken pox	174
Diphtheria	22
German measles	3
Measles	24
Scarlet fever	22
Smallpox	61
Typhoid fever	7
Whooping cough	116

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Cerebrospinal meningitis	
McClain County	1
McCurtain County	1
Chicken pox	16
Diphtheria	17
Influenza	245
Measles	23
Mumps	16
Pneumonia	75
Scarlet fever	25
Smallpox:	
Custer County	8
Johnston County	9
Scattering	12
Typhoid fever	8
Whooping cough	17

OREGON

Chicken pox	27
Diphtheria	
Portland	12
Scattering	12
Influenza	153
Lethargic encephalitis	[1] 2
Measles	4
Mumps	41
Pneumonia	22
Scarlet fever	15
Smallpox	
Portland	12
Scattering	15
Tuberculosis	15
Typhoid fever	3
Whooping cough	14

SOUTH DAKOTA

Chicken pox	11
Diphtheria	2
Measles	1
Mumps	2
Pneumonia	5
Scarlet fever	32
Smallpox	5
Trachoma	1
Typhoid fever	1
Whooping cough	2

TEXAS

	Cases
Chicken pox	68
Diphtheria	21
Influenza	21
Measles	86
Mumps	109
Pneumonia	8
Scarlet fever	20
Smallpox	26
Trachoma	4
Tuberculosis	19
Typhoid fever	1
Whooping cough	10

VERMONT

	Cases
Chicken pox	32
Diphtheria	1
Measles	14
Mumps	86
Pneumonia	4
Scarlet fever	18
Typhoid fever	1
Whooping cough	38

WASHINGTON

	Cases
Chicken pox	92
Diphtheria	9
German measles	3
Measles	9
Mumps	89
Pneumonia	5
Scarlet fever	23
Smallpox	51
Tuberculosis	62
Typhoid fever	2
Whooping cough	66

WEST VIRGINIA

	Cases
Cerebrospinal meningitis—Wheeling	1
Diphtheria	7
Scarlet fever	14

WEST VIRGINIA—continued

	Cases
Smallpox	5
Typhoid fever	4

WISCONSIN

	Cases
Milwaukee:	
Chicken pox	41
Diphtheria	16
German measles	638
Influenza	3
Measles	314
Mumps	29
Ophthalmia neonatorum	1
Pneumonia	16
Scarlet fever	24
Smallpox	9
Trachoma	1
Tuberculosis	17
Whooping cough	21
Scattering:	
Chicken pox	109
Diphtheria	47
German measles	76
Influenza	67
Measles	202
Mumps	338
Pneumonia	36
Scarlet fever	122
Smallpox	36
Trachoma	1
Tuberculosis	17
Typhoid fever	1
Whooping cough	64

WYOMING

	Cases
Chicken pox	11
Measles	7
Mumps	14
Scarlet fever	7
Typhoid fever	6
Whooping cough	10

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
February, 1925										
Delaware		10	14		2			30		6
Illinois	9	457	149	18	2,664	1	9	2,099	298	71
Kansas	5	191	86	0	32	0	0	468	30	11
Maine	1	23	35	0	19	0	0	75	0	12
Mississippi	1	57	19,368	2,681	417	299	4	30	244	126
Montana	1	32	5		107		2	122	62	7
North Carolina	2	140			96		2	124	329	4
North Dakota	1	64			4		2	236	15	6
Pennsylvania	7	930		1	3,195		2	2,878	25	69
South Carolina	1	235	245	1	4	1		7	79	7
South Dakota		25			6		1	188	40	7
Virginia	10	152	7,986	62	507	7	4	195	22	27
Wyoming		12	2		8			30	5	8

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended March 14, 1925:

Los Angeles, Calif.

Week ended March 14, 1925:	
Number of rats examined	3,903
Number of rats found to be plague infected	24
Number of squirrels examined	807
Number of squirrels found to be plague infected	0
Totals to March 14, 1925:	
Number of rats examined	63,718
Number of rats found to be plague infected	150
Number of squirrels examined	4,677
Number of squirrels found to be plague infected	3

Oakland, Calif.

(Including other East Bay communities)

Week ended March 14, 1925:	
Number of rats examined	2,968
Number of rats found to be plague infected	0
Totals to March 14, 1925:	
Number of rats examined	23,789
Number of rats found to be plague infected	21

New Orleans, La.

Week ended March 14, 1925:	
Number of vessels inspected	355
Number of inspections made	988
Number of vessels fumigated with cyanide gas	37
Number of rodents examined for plague	4,695
Number of rodents found to be plague infected	0
Totals to March 14, 1925:	
Number of rodents examined for plague	55,718
Number of rodents found to be plague infected	12

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended March 14, 1925, 35 States reported 1,488 cases of diphtheria. For the week ended March 15, 1924, the same States reported 1,863 cases of this disease. One hundred cities, situated in all parts of the country and having an aggregate population of more than 28,700,000, reported 900 cases of diphtheria for the week ended March 14, 1925. Last year for the corresponding week they reported 1,035 cases. The estimated expectancy for these cities was 1,008 cases.

Measles.—Twenty-eight States reported 4,051 cases of measles for the week ended March 14, 1925, and 19,333 cases of this disease

for the week ended March 15, 1924. One hundred cities reported 2,478 cases of measles for the week this year, and 6,749 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: Thirty-five States, this year, 4,391 cases; last year, 4,444 cases; 100 cities—this year, 2,355 cases; last year, 1,918 cases; estimated expectancy, 1,054 cases.

Smallpox.—For the week ended March 14, 1925, 35 States reported 871 cases of smallpox. Last year for the corresponding week they reported 1,331 cases. One hundred cities reported smallpox for the week as follows: 1925, 309 cases; 1924, 498 cases; estimated expectancy, 101 cases. These cities reported 7 deaths from smallpox for the week this year: 4 in Minneapolis, Minn.; 2 in Milwaukee, Wis.; and 1 in Los Angeles, Calif.

Typhoid fever.—Two hundred and six cases of typhoid fever were reported for the week ended March 14, 1925, by 34 States. For the corresponding week of 1924 the same States reported 155 cases. One hundred cities reported 46 cases of typhoid fever for the week this year and 55 cases for the corresponding week last year. The estimated expectancy for these cities was 36 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 100 cities as follows: 1925, 1,366 deaths; 1924, 1,274 deaths.

City reports for week ended March 14, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	5	2	1	0	0	0	49	5
New Hampshire:									
Concord	22,408	0	0	0	0	0	0	0	1
Manchester	81,383	0	2	0		2	2	0	6
Vermont:									
Barre	[1] 10,008	6	0	0	0	0	0	11	1
Burlington	23,613	2	0	0	0	0	12	18	2

[1] Population Jan. 1, 1920.

City reports for week ended March 14, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND—contd.									
Massachusetts:									
Boston	770,400	31	62	39	30	7	147	9	27
Fall River	120,912	3	5	0	11	3	1	0	4
Springfield	144,227	3	4	3	1	1	48	5	3
Worcester	191,927	29	4	4	4	0	4	0	13
Rhode Island									
Pawtucket	68,799	5	1	0	0	0	0	0	4
Providence	242,378	0	11	7	3	1	1	0	14
Connecticut									
Bridgeport	[1] 143,555	0	8	7	2	1	1	0	5
Hartford	[1] 138,036	12	8	9	1	1	0	2	13
New Haven	172,967	14	3	1	4	0	16	1	2
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	11	17	4	1	1	131	7	16
New York	5,927,625	231	227	232	74	25	77	47	207
Rochester	317,867	1	7	17	0	0	30	25	5
Syracuse	184,511	1	6	6	7	2	2	10	8
New Jersey									
Camden	124,157	5	4	2	0	0	29	0	3
Newark	438,699	25	18	7	19	0	43	16	17
Trenton	127,390	2	5	4		4	24	0	5
Pennsylvania									
Philadelphia	1,922,788	75	77	137		10	345	34	78
Pittsburgh	613,442	108	22	12		5	317	19	84
Reading	110,917	19	3	2	0	0	25	8	0
Scranton	140,636	0	4	3	0	0	2	0	11
EAST NORTH CENTRAL									
Ohio									
Cincinnati	406,312	21	10	8		3	2	10	13
Cleveland	888,519	113	28	32		3	4	21	45
Columbus	261,082	7	4	1		14	1	1	10
Toledo	268,338	12	5	10	0	0	27	0	15
Indiana									
Fort Wayne	93,573	9	3	1	0	0	0	0	3
Indianapolis	342,718	0	10	0		2	0	5	28
South Bend	76,709	3	1	4	0	0	5	0	4
Terre Haute	68,939	4	1	0		3	0	0	5
Illinois									
Chicago	2,886,121	113	113	62	67	17	479	28	132
Cicero	55,968	8	1	0	0	0	1	1	0
Peoria	79,675	11	1	0	0	0	0	2	7
Springfield	61,833	5	1	2	2	0	2	63	3
Michigan									
Detroit	995,668	44	57	37	6	1	12	11	50
Flint	117,968	11	6	3	0	0	1	0	0
Grand Rapids	145,947	13	3	2		2	29	0	2
Wisconsin:									
Madison	42,519	5	1	0	0	0	7	157	1
Milwaukee	484,595	47	15	18	1	0	426	139	28
Racine	64,393	14	1	2	0	0	29	7	0
Superior	[1] 39,671	5	1	0	0	0	0	0	1
WEST NORTH CENTRAL									
Minnesota									
Duluth	106,289	8	1	0	0	0	0	0	5
Minneapolis	409,125	74	15	21		1	8	7	17
St. Paul	241,891	20	12	17	0	0	18	25	11
Iowa:									
Davenport	61,262	0	1	1	0		3	0	
Des Moines	140,923	1	3	0	0		0	0	
Sioux City	79,662	9	2	1	0		0	26	
Waterloo	39,667	9	0	0	0		0		
Missouri:									
Kansas City	351,819	19	9	8	18	12	2	25	27
St. Joseph	78,232	4	2	2	0	0	0	0	4
St. Louis	803,853	26	42	36	3	2	6	11	

[1] Population Jan. 1, 1920.

City reports for week ended March 14, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CENTRAL—continued									
North Dakota:									
Fargo	24,841	1	1	0	0	0	0	12	1
Grand Forks	14,547	2	0	0	0	-	0	0	-
South Dakota:									
Aberdeen	15,829	0	-	0	0	-	0	0	-
Sioux Falls	29,206	0	2	0	0	0	0	0	0
Nebraska:									
Lincoln	58,761	27	2	1	0	0	2	0	1
Omaha	204,382	9	4	3	0	0	0	0	10
Kansas:									
Topeka	52,555	6	1	1	0	0	0	145	3
Wichita	79,261	26	1	8	0	0	2	2	2
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	5	2	1	0	0	4	0	5
Maryland:									
Baltimore	773,580	72	24	19	26	2	10	32	39
Cumberland	32,361	-	1	3	1	0	0	-	1
Frederick	11,301	-	0	0	0	0	1	-	0
District of Columbia:									
Washington	[1] 437,571	20	11	7	2	2	22	-	16
Virginia:									
Lynchburg	30,277	1	0	0	0	0	0	44	3
Norfolk	159,089	25	1	1	0	0	8	77	6
Richmond	181,044	5	2	4	-	1	3	8	3
Roanoke	55,502	6	1	0	0	0	3	1	2
West Virginia:									
Charleston	45,597	3	1	0	0	0	9	0	3
Huntington	57,918	2	0	0	0	-	0	0	-
Wheeling	[1] 56,208	5	2	1	-	1	0	3	9
North Carolina:									
Raleigh	29,171	5	0	0	0	0	7	0	2
Wilmington	35,719	0	1	0	0	0	0	4	1
Winston-Salem	56,230	7	1	2	-	2	5	3	1
South Carolina:									
Charleston	71,245	0	1	1	-	3	0	0	4
Columbia	39,688	2	1	0	0	0	0	2	2
Greenville	25,789	0	0	1	0	0	0	0	2
Georgia:									
Atlanta	222,963	1	2	4	10	2	0	0	12
Brunswick	15,937	-	0	0	0	0	0	-	0
Savannah	89,448	0	1	1	23	1	0	17	5
Florida:									
St. Petersburg	24,403	0	0	0	0	0	0	0	0
Tampa	56,050	-	2	-	-	-	-	-	-
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	1	1	0	3	0	0	2	3
Lexington	43,673	1	0	2	0	0	0	0	2
Louisville	257,671	1	5	3	10	0	0	0	23
Tennessee:									
Memphis	170,067	-	6	0	-	1	1	-	14
Nashville	121,128	-	1	-	-	5	-	-	5
Alabama:									
Birmingham	195,901	9	2	2	6	7	0	3	11
Mobile	63,858	0	0	0	-	3	0	5	8
Montgomery	45,383	1	1	1	1	0	0	11	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	1	1	1	0	-	7	0	-
Little Rock	70,916	0	1	0	15	2	9	0	3
Louisiana:									
New Orleans	404,575	14	12	24	23	14	0	1	10
Shreveport	54,590	1	-	1	0	0	0	0	4

[1] Population Jan. 1, 1920

City reports for week ended March 14, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
WEST SOUTH CENTRAL—continued									
Oklahoma:									
Oklahoma	101,150	0	1	0	10	2	0	0	6
Texas:									
Dallas	177,274	25	4	7	12	3	1	3	9
Galveston	46,877	6	1	0	0	0	0	4	1
Houston	154,970	4	2	0	-------	2	0	2	3
San Antonio	184,727	0	3	1	0	0	2	0	5
MOUNTAIN									
Montana:									
Billings	16,927	5	0	0	-------	1	3	13	2
Great Falls	27,787	1	1	3	0	0	68	0	0
Helena	[1] 12,037	0	0	0	0	0	0	0	0
Missoula	[1] 12,668	0	0	1	0	0	5	0	0
Idaho:									
Boise	22,806	0	0	0	0	0	0	0	0
Colorado:									
Denver	272,031	13	8	6	-------	1	2	110	14
Pueblo	43,519	11	2	0	0	0	0	0	1
New Mexico:									
Albuquerque	16,648	1	1	0	0	0	0	0	0
Arizona:									
Phoenix	33,899	0	-------	0	-------	5	0	3	4
Utah:									
Salt Lake City	126,241	19	2	1	-------	3	2	31	4
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	1
PACIFIC									
Washington:									
Seattle	[1] 315,685	67	5	9	0	-------	6	102	-------
Spokane	104,573	10	3	17	0	-------	1	0	-------
Tacoma	101,731	1	1	1	0	0	0	2	0
Oregon:									
Portland	273,621	22	4	11	2	0	4	14	10
California:									
Los Angeles	666,853	78	35	28	48	1	20	42	30
Sacramento	69,950	-------	1	1	0	0	0	-------	1
San Francisco	539,038	31	26	12	4	3	11	51	7

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	1	6	0	0	0	2	1	0	1	0	22
New Hampshire:											
Concord	0	4	0	0	0	0	0	0	0	0	4
Manchester	2	20	0	0	0	0	0	3	1	0	28
Vermont:											
Barre	1	2	0	0	0	1	0	0	0	0	5
Burlington	1	0	0	0	0	0	0	0	0	1	5
Massachusetts:											
Boston	55	109	0	0	0	24	2	1	0	17	259
Fall River	3	0	0	0	0	6	1	0	0	5	40
Springfield	6	26	0	0	0	0	0	0	0	10	40
Worcester	8	9	0	0	0	5	0	0	0	9	67
Rhode Island:											
Pawtucket	1	4	0	0	0	2	0	0	0	0	20
Providence	9	8	0	0	0	4	0	0	0	1	64

[1] Population Jan. 1, 1920.

City reports for week ended March 14, 1925—**Continued**

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND—continued											
Connecticut:											
Bridgeport	7	18	0	0	0	4	0	1	0	4	41
Hartford	6	11	1	0	0	5	0	0	0	12	53
New Haven	5	18	0	0	0	1	0	0	0	5	40
MIDDLE ATLANTIC											
New York:											
Buffalo	19	25	0	1	0	11	0	1	1	25	153
New York	197	346	0	0	0	[1] 105	7	8	0	129	1,608
Rochester	12	79	0	0	0	3	0	0	0	6	71
Syracuse	16	3	0	0	0	2	1	0	0	3	45
New Jersey:											
Camden	3	29	0	6	0	2	1	0	0	13	39
Newark	24	58	0	0	0	9	1	0	0	68	127
Trenton	4	2	0	0	0	3	0	0	0	3	42
Pennsylvania:											
Philadelphia	63	223	0	2	0	39	3	1	0	91	613
Pittsburgh	21	84	0	0	0	15	0	0	0	9	306
Reading	3	18	0	0	0	2	0	0	0	8	38
Scranton	4	3	0	0	0	1	0	0	0	5	-------
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	11	36	1	1	0	8	0	0	0	4	127
Cleveland	36	46	0	1	0	17	2	0	0	20	226
Columbus	8	22	1	9	0	2	0	1	0	4	93
Toledo	15	40	4	0	0	3	1	1	0	27	84
Indiana:											
Fort Wayne	2	7	1	0	0	3	0	0	0	1	23
Indianapolis	11	0	2	23	0	6	0	0	1	18	130
South Bend	4	4	1	0	0	1	0	0	0	0	19
Terre Haute	2	4	1	1	0	1	0	0	0	0	24
Illinois:											
Chicago	89	326	3	3	0	71	3	4	0	119	816
Cicero	2	9	0	0	0	0	0	0	0	0	5
Peoria	3	9	1	1	0	1	0	0	0	0	19
Springfield	1	4	1	0	0	0	0	0	0	0	27
Michigan:											
Detroit	84	122	4	3	0	24	1	0	0	35	299
Flint	7	1	1	0	0	0	0	0	0	0	18
Grand Rapids	9	48	1	1	0	2	0	0	0	1	36
Wisconsin:											
Madison	3	4	1	0	0	0	0	0	0	7	9
Milwaukee	35	16	1	10	2	6	0	0	0	43	113
Racine	5	3	1	0	0	0	0	0	0	2	8
Superior	2	18	5	1	0	0	1	0	0	0	6
WEST NORTH CENTRAL											
Minnesota:											
Duluth	5	23	1	1	0	1	0	0	0	0	20
Minneapolis	35	80	7	19	4	4	1	1	0	3	113
St. Paul	27	22	7	4	0	4	0	2	1	14	66
Iowa:											
Davenport	2	1	2	2	-------	-------	0	0	-------	0	-------
Des Moines	9	2	2	1	-------	-------	0	0	-------	0	-------
Sioux City	2	0	1	1	-------	-------	0	0	-------	0	-------
Waterloo	3	0	1	8	-------	-------	0	0	-------	-------	-------
Missouri:											
Kansas City	12	86	2	2	0	1	0	0	0	1	140
St. Joseph	2	4	0	0	0	1	0	0	0	1	38
St. Louis	29	118	2	9	0	18	1	2	1	7	259
North Dakota:											
Fargo	1	0	0	0	0	0	0	0	0	0	12
Grand Forks	0	0	0	0	-------	-------	0	0	-------	0	-------
South Dakota:											
Aberdeen	-------	3	-------	0	-------	-------	-------	0	-------	0	-------
Sioux Falls	3	2	1	0	0	0	0	0	0	0	8

[1] Pulmonary tuberculosis only.

City reports for week ended March 14, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL—continued											
Nebraska:											
Lincoln	4	1	0	0	0	2	0	0	0	0	11
Omaha	5	3	2	16	0	1	0	0	0	1	48
Kansas:											
Topeka	2	6	1	0	0	0	0	0	0	0	22
Wichita	2	3	3	0	0	1	0	0	0	3	23
SOUTH ATLANTIC											
Delaware:											
Wilmington	2	2	0	0	0	4	0	0	0	1	34
Maryland:											
Baltimore	38	50	0	0	0	15	2	5	0	111	260
Cumberland	0	1	0	0	0	3	0	0	0		12
Frederick	1	1	0	0	0	0	0	0	0		4
District of Columbia:											
Washington	23	42	1	1	0	7	1	1	0	20	136
Virginia:											
Lynchburg	0	0	0	0	0	0	0	0	0	3	16
Norfolk	2	1	0	0	0	1	0	0	0	8	
Richmond	3	2	0	0	0	1	0	0	0	2	54
Roanoke	1	0	1	0	0	0	0	0	0	0	16
West Virginia:											
Charleston	1	0	1	1	0	2	0	0	0	2	22
Huntington	1	0	0	3			0	2		0	
Wheeling	1	4	1	0	0	1	0	1	0	4	28
North Carolina:											
Raleigh	0	0	0	1	0	1	0	0	0	0	8
Wilmington	0	1	1	3	0	0	0	0	0	0	5
Winston-Salem	1	0	2	15	0	1	0	0	0	3	16
South Carolina:											
Charleston	0	0	0	1	0	1	0	0	0	1	28
Columbia	0	1	0	0	0	1	0	0	0	6	16
Greenville	0	0	1	6	0	0	0	0	0	0	13
Georgia:											
Atlanta	5	2	4	1	0	4	0	3	1	1	79
Brunswick	0	0	1	0	0	1	0	0	0	0	4
Savannah	1	1	1	0	0	1	0	0	1	2	42
Florida:											
St. Petersburg	2	0	0	0	0	0	0	0	0	0	19
Tampa	0		1				2				
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	7	0	0	0	3	0	0	0	0	22
Lexington	1	0	0	0	0	1	0	0	0	0	15
Louisville	4	16	1	0	0	3	0	1	0	2	93
Tennessee:											
Memphis	3	2	1	1	0	6	0	3	0		69
Nashville	2		1		0	5	0		2		68
Alabama:											
Birmingham	1	26	1	70	0	6	1	0	1	3	85
Mobile	0	0	2	0	0	3	0	1	1	0	38
Montgomery	0	0	0	4	0	0	0	0	0	0	23
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	1	1	1			0	0		11	
Little Rock	1	0	0	0	0	3	0	0	0	0	
Louisiana:											
New Orleans	4	15	3	0	0	5	2	4	0	5	179
Shreveport		0		1	0	1		0	0	0	23
Oklahoma:											
Oklahoma	2	3	5	0	0	1	0	0	0	0	28
Texas:											
Dallas	1	5	7	0	0	4	0	0	0	3	43
Galveston	0	0	1	1	0	2	1	1	0	0	9
Houston	1	1	1	13	0	3	0	0	0	0	48
San Antonio	0	1	0	0	0	10	0	1	1	0	63

City reports for week ended March 14, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
MOUNTAIN											
Montana:											
Billings	1	4	0	0	0	0	0	0	0	8	4
Great Falls	1	2	1	1	0	0	0	0	0	0	3
Helena	0	0	0	0	0	0	0	0	0	0	9
Missoula	1	0	0	0	0	0	0	0	0	0	7
Idaho:											
Boise	1	0	1	2	0	0	0	0	0	0	3
Colorado:											
Denver	12	11	3	0	0	10	0	0	0	0	88
Pueblo	1	0	0	0	0	0	0	2	0	0	9
New Mexico:											
Albuquerque	2	0	0	0	0	7	0	0	0	0	11
Arizona:											
Phoenix		0		0	0	19		0	0	2	43
Utah:											
Salt Lake City	3	3	2	0	0	0	0	0	0	10	34
Nevada:											
Reno	0	1	1	7	0	0	0	0	0	0	4
PACIFIC											
Washington:											
Seattle	9	19	1	21			1	4		56	
Spokane	4	4	7	3			0	0		5	
Tacoma	2	3	2	4	0	1	1	0	0	0	13
Oregon:											
Portland	6	5	5	20	0	6	1	0	0	6	
California:											
Los Angeles	14	41	2	44	1	31	2	1	0	77	230
Sacramento	2	1	1	5	0	0	0	0	0		20
San Francisco	17	11	44	8	0	14	1	0	0	38	147

Division, State, and city	Cerebrospinal meningitis: Cases	Cerebrospinal meningitis: Deaths	Lethargic encephalitis: Cases	Lethargic encephalitis: Deaths	Pellagra: Cases	Pellagra: Deaths	Poliomyelitis (infantile paralysis): Cases, estimated expectancy	Poliomyelitis: Cases	Poliomyelitis: Deaths	Typhus fever: Cases	Typhus fever: Deaths
NEW ENGLAND											
Massachusetts:											
Boston	0	0	1	0	0	0	0	0	0	0	0
Springfield	0	0	1	1	0	0	0	0	0	0	0
Rhode Island:											
Providence	1	0	0	0	0	0	0	0	0	0	0
Connecticut:											
Hartford	0	0	0	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC											
New York:											
New York	4	6	5	4	0	0	1	0	0	0	0
New Jersey:											
Newark	0	0	2	0	0	0	0	0	0	0	0
Pennsylvania:											
Philadelphia	1	1	0	0	0	1	0	0	0	0	0
Pittsburgh	1	2	0	0	0	0	0	0	0	0	0
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	0	1	0	0	0	0	0	0	0	0	0
Cleveland	2	0	0	2	0	0	0	0	0	0	0
Columbus	1	1	0	0	0	0	0	0	0	0	0
Indiana:											
Fort Wayne	1	1	0	0	0	0	0	0	0	0	0

City reports for week ended March 14, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	Cases	Deaths
EAST NORTH CENTRAL—continued											
Illinois:											
Chicago	1	1	2	0	0	0	1	0	0	0	0
Michigan:											
Detroit	2	0	1	0	0	0	0	0	0	0	0
Wisconsin											
Milwaukee	0	0	0	0	0	0	0	1	0	0	0
WEST NORTH CENTRAL											
Minnesota.											
St. Paul	0	0	1	0	0	0	0	0	0	0	0
Nebraska:											
Lincoln	0	0	0	0	0	0	0	1	1	0	0
SOUTH ATLANTIC											
Maryland·											
Baltimore	1	1	1	1	0	0	0	0	0	0	1
District of Columbia											
Washington	1	1	1	1	0	0	0	0	0	0	0
Georgia											
Atlanta	0	0	0	0	0	1	0	0	0	0	0
Florida:											
St Petersburg	0	1	0	0	0	0	0	0	0	0	0
EAST SOUTH CENTRAL											
Tennessee											
Memphis	0	0	0	0	1	1	0	0	0	0	0
Nashville	......	2	......	0	......	0	0	......	0	......	0
Alabama											
Birmingham	0	0	0	0	2	0	0	1	1	0	0
Montgomery	0	0	0	0	1	0	0	0	0	0	0
WEST SOUTH CENTRAL											
Louisiana											
New Orleans	0	0	0	0	1	1	0	0	0	0	0
Texas											
Galveston	0	0	0	0	0	1	0	0	0	0	0
Houston	0	1	0	0	0	1	0	0	0	0	0
MOUNTAIN											
Utah:											
Salt Lake City	1	1	0	0	0	0	0	0	0	0	0
PACIFIC											
Oregon											
Portland	0	1	0	0	0	0	0	0	0	0	0
California.											
Los Angeles	0	0	0	0	0	1	0	2	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended March 14, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities in-

cluded in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, January 4, to March 14, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Jan. 10	Jan 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14
Total	169	[2] 172	[2] 163	[3] 166	[2] 175	[2] 168	149	[4] 169	162	[5] 168
New England	256	179	171	199	191	246	241	[4] 189	233	176
Middle Atlantic	181	188	175	155	171	165	163	178	167	214
East North Central	132	141	130	[3] 135	145	132	123	119	114	128
West North Central	143	255	199	251	255	259	209	299	282	201
South Atlantic	173	[2] 106	[2] 138	128	[2] 153	[2] 183	156	114	104	[6] 93
East South Central	120	91	80	97	63	69	80	51	63	[7] 40
West South Central	144	195	162	148	176	162	125	162	144	158
Mountain	239	153	239	134	191	95	162	153	86	105
Pacific	194	206	223	293	270	180	165	258	235	197

MEASLES CASE RATES

	Jan. 10	Jan 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14
Total	215	[2] 141	[2] 213	[3] 214	[2] 254	[2] 297	383	[4] 358	418	[5] 451
New England	395	440	497	484	576	661	720	[4] 585	656	542
Middle Atlantic	169	157	187	205	205	287	373	343	428	518
East North Central	417	127	379	[3] 373	453	515	688	632	789	740
West North Central	19	12	27	21	17	31	27	73	68	75
South Atlantic	83	[2] 43	[2] 38	37	[2] 49	[2] 98	110	81	100	[6] 150
East South Central	29	46	74	91	51	74	51	46	86	[7] 7
West South Central	5	23	14	14	37	51	14	51	23	88
Mountain	134	267	248	286	782	153	620	916	29	763
Pacific	194	160	55	17	61	29	64	61	107	110

SCARLET FEVER CASE RATES

	Jan. 10	Jan 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14
Total	369	[2] 355	[2] 370	[3] 364	[2] 412	[2] 400	390	[4] 408	395	[5] 432
New England	661	561	596	534	614	564	606	[4] 558	584	534
Middle Atlantic	324	294	326	322	373	407	376	412	372	439
East North Central	383	375	369	[3] 379	426	397	432	434	433	497
West North Central	757	755	804	779	871	728	742	734	775	719
South Atlantic	160	[2] 243	[2] 189	185	[2] 255	[2] 277	167	203	171	[6] 224
East South Central	229	183	183	217	97	212	223	183	194	[7] 336
West South Central	148	116	195	204	162	121	125	144	185	107
Mountain	382	534	305	258	334	382	248	315	286	200
Pacific	189	183	220	226	258	177	186	223	218	229

SMALLPOX CASE RATES

	Jan. 10	Jan 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14
Total	57	[2] 58	[2] 70	[3] 67	[2] 76	[2] 79	66	[4] 66	62	[5] 61
New England	0	0	0	0	0	0	0	[4] 0	0	0
Middle Atlantic	3	10	6	9	2	4	2	3	1	5
East North Central	40	39	48	[3] 35	39	35	56	28	42	39
West North Central	220	193	180	195	145	193	126	120	114	124
South Atlantic	30	[2] 64	[2] 38	45	[2] 62	[2] 98	67	43	51	[6] 60
East South Central	395	217	675	652	823	675	532	583	652	[7] 495
West South Central	65	32	32	60	125	139	83	116	74	74
Mountain	29	57	95	48	29	162	86	57	48	95
Pacific	148	212	209	177	267	220	215	313	206	247

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Racine, Wis., not included.
[4] Hartford, Conn., not included.
[5] Tampa, Fla., and Nashville, Tenn., not included.
[6] Tampa, Fla., not included.
[7] Nashville, Tenn., not included.

Summary of weekly reports from cities, January 4, to March 14, 1925—Annual rates per 100,000 population—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14
Total	30	[2] 21	[2] 17	[3] 18	[2] 13	[2] 13	11	[4] 14	11	[5] 9
New England	15	25	20	7	30	20	0	[4] 13	7	5
Middle Atlantic	49	21	20	19	13	6	10	8	10	5
East North Central	23	23	11	[3] 10	8	6	6	7	11	4
West North Central	6	10	6	12	0	10	4	17	6	10
South Atlantic	55	[2] 21	[2] 11	37	[2] 17	[2] 34	8	20	8	[6] 21
East South Central	51	17	29	23	11	40	34	34	34	[7] 33
West South Central	70	70	42	60	23	46	42	42	28	28
Mountain	10	0	48	19	29	19	38	76	10	19
Pacific	26	6	15	3	17	12	23	9	15	15

INFLUENZA DEATH RATES

	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14
Total	21	[2] 22	[2] 22	[3] 23	[2] 30	[2] 28	30	[4] 34	30	[6] 34
New England	17	27	10	27	47	27	17	[4] 40	17	35
Middle Atlantic	20	18	20	16	24	22	21	20	15	24
East North Central	16	15	18	[3] 12	13	17	18	24	27	33
West North Central	13	2	20	15	20	11	22	37	35	33
South Atlantic	35	[2] 47	[2] 23	39	[2] 49	[2] 55	55	49	53	[6] 29
East South Central	46	46	63	74	69	63	74	126	103	106
West South Central	41	87	92	82	97	122	153	148	143	107
Mountain	19	29	10	38	57	57	57	19	19	48
Pacific	20	12	12	20	41	4	12	29	29	16

PNEUMONIA DEATH RATES

	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14
Total	192	[2] 215	[2] 211	[3] 206	[2] 225	[2] 222	216	[4] 201	205	[6] 223
New England	122	157	216	241	211	239	241	[4] 242	226	229
Middle Atlantic	228	260	234	230	253	231	216	185	210	214
East North Central	152	152	142	[3] 145	164	168	184	171	195	241
West North Central	90	107	120	118	134	131	131	166	140	175
South Atlantic	246	[2] 294	[2] 275	252	[2] 315	[2] 270	252	305	268	[6] 241
East South Central	292	189	320	303	326	320	320	292	269	422
West South Central	260	449	362	229	352	464	408	260	229	178
Mountain	229	248	324	315	191	277	219	267	162	210
Pacific	184	163	208	217	196	192	213	163	139	155

[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Racine, Wis., not included.
[4] Hartford, Conn., not included.
[5] Tampa, Fla., and Nashville, Tenn., not included.
[6] Tampa, Fla., not included.
[7] Nashville, Tenn., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

PLAGUE ON VESSEL

Motor ship Silver Larch—At Port Said, Egypt.—On March 16, 1925, a case of suspect plague was landed at Port Said, Egypt, from the motor ship *Silver Larch*, from Yokohama and way ports. The case was declared positive for plague March 18, 1925. The vessel left Port Said for Boston, New York, and Philadelphia March 17, 1925. The *Silver Larch* left Yokohama December 23, touching at Kobe, Hongkong, Shanghai, Manila, and ports in Java and the Straits Settlements.

BRAZIL

Plague—Bahia—January-February, 1925—November, 1923–March, 1924.—Plague has been reported at Bahia, Brazil, as follows: Week ended January 10, 1925, 1 case, 1 death; week ended February 21, 1925, 2 cases, 1 death. November, 1923–March, 1924—Plague was reported at Bahia from November 11, 1923, to March 15, 1924, with 12 cases, 9 deaths.

CUBA

Cerebrospinal meningitis—Antilla.—During the period January 1–March 14, 1925, five cases of cerebrospinal meningitis with one death were notified at Antilla, Cuba. The cases occurred in Haitians recently arrived.

FINLAND

Lethargic encephalitis—Typhoid fever—February 1-15, 1925.—During the period February 1 to 15, 1925, 5 cases of lethargic encephalitis and 42 cases of typhoid fever were reported in Finland. Population, 3,435,249.

LITHUANIA

Typhoid fever—Typhus fever—January, 1925.—During the month of January, 1925, 38 cases of typhoid fever with 1 death, and 27 cases of typhus fever with 2 deaths were reported in Lithuania. Population, census of 1923, 2,028,972.

SWEDEN

Foot and mouth disease.—Under date of February 26, 1925, foot and mouth disease was reported seriously prevalent in the southern counties of Sweden, and to be increasing in area of prevalence.

UNION OF SOUTH AFRICA

Plague—Outbreak in a group of European families—February 1-7, 1925.—During the week ended February 7, 1925, seven cases of plague with five deaths were reported in the Union of South Africa, among natives. During the same period an outbreak of suspect plague was reported on four farms in Boshoff district, Transvaal. Four European families living in close connection with each other were affected. Plague was verified in one of this group who died February 6, 1925. For distribution of cases and deaths according to locality, see page 684.

VIRGIN ISLANDS

Communicable diseases—February, 1925.—During the month of February, 1925, communicable diseases were reported in the Virgin Islands of the United States as follows:

Island and disease	Cases	Remarks
St. Thomas and St John		
Chancroid	2	
Fish poisoning	5	
Gonorrhea	5	Imported, 2.
Malaria	3	Benign tertian.
Pellagra	1	
Syphilis	7	Secondary.
Tetanus	1	
Tuberculosis	2	Chronic pulmonary, 1, of peritoneum, 1
St. Croix:		
Chancroid	1	
Filariasis	6	
Gonorrhea	1	
Leprosy	1	
Syphilis	6	Secondary.
Trachoma	5	
Tuberculosis	1	Chronic pulmonary.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended April 3, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Jan 18-24, 1925: Cases, 2,938; deaths, 1,762.
Calcutta	Feb. 1-7	15	15	
Madras	Feb. 15-21	10	7	
Siam:				
Bangkok	Feb 1-7	2	1	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Brazil:				
Bahia	Feb. 15-Jan. 10	3	3	
Canary Islands:				
Las Palmas	Jan. 21-23	2		Stated to be endemic.
Ceylon:				
Colombo	Feb. 8-14	4	2	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended April 3, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
India				Jan. 18-24, 1925: Cases, 4,095 deaths, 3,480.
Karachi	Feb 15 21	1	1	
Madras presidency	Jan. 18-24	222	170	
Rangoon	Feb 1-7	17	13	
Java				
East Java--				
Sidoardjo	Jan. 2			Declared epidemic. Province of Soerabaya.
Soerabaya	Jan 15-21	1	1	
West Java--				
Cheribon	Jan 1-14		44	Cheribon Province.
Pekalongan	do		81	Pekalongan Province.
Tegal	do		37	Do.
Union of South Africa				Feb. 1-7, 1925: Cases, 7; deaths, 5, natives European—1 case, 1 death.
Cape Province—				
Kimberley	Feb 1-7	1	1	On farm.
Transvaal -				
Boshof District	do	4	3	Do.
Wodehouse District	do	2	1	Do.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
China				
Amoy	Feb 8-14			Present.
Antung	Feb. 9-22	5		
Manchuria –				
Harbin	Jan 22-Feb 11	4		
Nanking	Jan. 18-Feb 21			Do.
Colombia:				
Buenaventura	Feb 15-22	1		
Great Britain				
Newcastle-on-Tyne	Mar 1-7	1		
India				Jan 18-24, 1925: Cases, 2,882; deaths, 631.
Bombay	Feb 1-7	42	28	
Calcutta	do	219	128	
Madras	Feb. 15-21	94	24	
Rangoon	Feb 1-7	91	15	
Java				
East Java—				
Soerabaya	Jan 15 21	62	11	
West Java—				
Buitenzorg	Dec 25-31	1		Batavia Residency.
Cheribon	Nov 25-Dec 31	5		Cheribon Residency.
Do.	Jan. 1-7	2		Do.
Pemalang	Jan. 8-14	1		Do.
Lithuania				Jan 1-31, 1925. Cases, 2.
Mexico				
Tampico	Mar. 1-10	4	1	
Vera Cruz	Mar. 9-15		2	
Portugal·				
Lisbon	Feb. 8-28	14	2	
Sierra Leone:				
Freetown	Feb. 7-14	2		From S. S Elmina.
Spain				
Malaga	Feb. 29-Mar. 7		1	
Valencia	Mar. 1-7	1		
Syria.				
Aleppo	Feb. 15-21	8	1	Estimated.
Tunis:				
Tunis	Mar 5-11	18	21	
Union of South Africa				
Cape Province	Feb. 1-7			Outbreaks.
Transvaal	do			Do.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Feb. 11-20	1		
Chile:				
Concepcion	Jan. 27-Feb. 2		1	
Lithuania				Jan. 1-31, 1925: Cases, 27; deaths, 2.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended April 3, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Mexico:				
San Luis Potosi	Mar. 8-14		1	
Tunis:				
Tunis	Mar. 5-11	1		
Union of South Africa:				
Cape Province	Feb. 1-7			Outbreaks.

Reports Received from December 27, 1924, to March 27, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Dec. 27, 1924: Cases, 14, deaths, 13.
Colombo	Nov. 16-22	1		
Do.	Jan. 11-24	2	2	
India				Oct 19, 1924, to Jan. 3, 1925: Cases, 27,164, deaths, 16,228. Jan 4-17, 1925. Cases, 5,003; deaths, 2,943.
Bombay	Nov 23-Dec. 20	4	4	
Do.	Jan 18-24	1	1	
Calcutta	Oct. 26-Jan. 3	59	51	
Do.	Jan. 4-31	57	52	
Madras	Nov 16-Jan. 3	69	40	
Do	Jan. 4-Feb. 14	121	85	
Rangoon	Nov 9-Dec. 20	9	2	
Do	Jan. 4-31	6	4	
Indo-China				Aug. 1-Sept. 30, 1924. Cases, 14; deaths, 10.
Province—				
Anam	Aug 1-31	1	1	
Cambodia	Aug 1-Sept 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov. 30-Dec. 6	1		
Siam				
Bangkok	Nov 9-29	4	2	
Do	Jan. 18-31	3	1	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov 25			Present with several cases.
Feteira	do	1		
St Michael Island	Nov. 2-Jan. 3	30	13	
British East Africa:				
Tanganyika Territory	Nov. 23-Dec 27	17	10	
Uganda	Aug-Nov., 1924	242	211	
Canary Islands:				
Las Palmas	Feb. 4	1		Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec 19	3	1	Vicinity of Santa Cruz de Teneriffe.
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-Jan 3	12	9	
Do.	Jan. 4-Feb. 7	4	8	Five plague rodents.
China:				
Foochow	Dec. 28-Jan. 3			Present.
Nanking	Nov. 23-Jan. 31			Do.
Shing Hsien	October, 1924		790	
Ecuador:				
Chimborazo Province—				
Alausi District	Jan. 14		14	At two localities on Guayaquil and Quito Railway.
Guayaquil	Nov. 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92.
Do.	Jan. 1-Feb. 15	31	12	Rats taken, 31,252; rats found infected, 144.
Yaguachi	Feb. 1-15	1	1	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 27, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Egypt				Year 1924: Cases, 373. Jan. 1-28, 1925: Cases, 15.
City—				
Alexandria	Year 1924	2	2	Last case, Nov. 26.
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec. 7.
Suez	do	20	13	Last case, Dec. 20.
Province—				
Dakhalia	Jan. 1-8	1	1	
Kalioubiah	do	3		
Menoufieh	do	7	3	
Gold Coast				September November, 1924: Deaths, 48.
Hawaii				
Honokaa	Nov 4	1		Plague-infected rodents found Dec. 9, 1924, and Jan. 15, 1925.
India				Oct. 19, 1924, to Jan 3, 1925: Cases, 28,154; deaths, 21,505. Jan 4-17, 1925: Cases, 8,269; deaths, 6,983.
Bombay	Nov. 22-Jan 3	4	3	
Do	Jan. 4-17	2	2	
Calcutta	Jan. 18-24	1	1	
Karachi	Nov. 30-Dec. 16	2	1	
Do	Jan 4-24	10	9	
Do	Feb. 8-14	1	1	
Madras Presidency	Nov. 23-Dec 20	528	379	
Do	Dec. 28-Jan 3	157	108	
Do	Jan. 4-17	436	341	
Rangoon	Oct 26-Jan. 3	26	25	
Do	Jan. 4-31	38	34	
Indo-China				Aug 1-Sept 30, 1924. Cases, 25; deaths, 20.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Saigon	Jan 11-17	2	1	Including 100 square kilometers of surrounding territory.
Do	Dec. 25-31	1	1	Do.
Iraq	June 29-Dec. 13	18	13	
Japan	Aug 10-Dec. 6	19		
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri, epidemic.
Pare	Nov 29			Do
Soerabaya	Nov. 16-Dec 13	53	55	
Do	Dec 21-31	18	17	
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov 18-Dec 22		80	
Do	Jan. 30			Town Present
Pasoeroean	Dec. 27			Province. Epidemic in one locality.
Pekalongan	Oct 14-Nov 3		29	
Do	Nov. 18-Dec. 31		177	
Probalingga	Dec 27			Province. Epidemic.
Tegal	Oct 14-Nov. 24		10	
Do	Dec. 25-31		16	Province.
Madagascar				
Fort Dauphin (port)	Nov 1-Dec 15	12	5	
Itasy Province				Nov 1-Dec. 15, 1924: Cases, 4; deaths, 2
Majunga (port)	Nov. 1-30	1	1	
Moramanga Province				Nov. 1-Dec 15, 1924: Cases, 49; deaths, 34.
Tamatave (port)	Nov. 1-30	1	1	
Tananarive Province				Oct 16-Dec. 31, 1924. Cases, 298; deaths, 274.
Do				Jan. 1-15: Cases, 54, deaths, 48.
Tananarive (town)	Oct. 16-Nov 30	8	7	Bubonic, pneumonic, septicemic.
Do	Dec. 16-31	4	4	
Do	Jan. 1-15	1	1	
Mauritius Island				Sept. 7-Oct. 18, 1924. Cases, 60; deaths, 53.
Morocco:				
Marrakech				Feb. 9, 1925: Present in native quarter of town. Stated to be pneumonic in form and of high mortality.
Nigeria				August-November, 1924: Cases, 387, deaths, 317
Peru	February, 1925	6	6	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 27, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Siam:				
Bangkok	Dec. 28-Jan 3	1	1	
Do	Jan 25-31	1	1	
Siberia:				
Transbaikalia—				
Tuiga	October, 1924		3	On Chita Railroad.
Straits Settlements				
Singapore	Nov 9-15	1	1	
Do	Jan 4-17	3	2	
Do	Jan 25-31	3	2	
Syria:				
Beirut	Jan 11-20	1		
Turkey:				
Constantinople	Jan 9-15	5	5	
Union of South Africa	Jan 4-31	17	5	Native cases, 3, deaths, 1; white, 1 case
Cape Province -				
De Aar District	Nov 22-Jan. 3	4	1	Native
Do	Jan 4 10	2		Natives, on farms.
Do	Jan 25-31	1	1	Malay camp
Dronfield	Dec 7-13	1		8 miles from Kimberley.
Edenburg (town)	do			Plague infected house mouse.
Kimberley	Dec 7 27	3	2	
Maraisburg District	Nov 22-Dec 13	4	2	Bubonic, on Goedshoop Farm.
Orange Free State-				
Bloemfontein District	Dec 21-Jan 3	5	2	
Do	Jan. 11 17	1	1	Native, on farm.
Ficksburg District	Dec 28-Jan 3	1	1	
Hoopstad District	Dec 7-13	1		On farm
Kroonstad District	Nov 22-Jan 3	2	1	
Do	Jan 18-24	1	1	Native, on farm
Philippolis District	Dec 21-27	1		
Vredefort District	Dec 7-20	2	2	On farms
Steynsburg District	Jan 4-10	1		Native, on farm. Province not stated
Transvaal—				
Boshof District	Dec 7 Jan 3	3	3	On farm
Do	Jan 11-31	9	1	Native, 4 cases, white, 1 fatal case On farms
Smithfield	do	1		
Wolmaransstad District	Nov 22-29	1	1	On Farm Wolverspruit, Vaal River Native
On vessel				
S. S. Conde				At Marseille, France, Nov. 8, 1924 Plague rat found Vessel left for Tamatave, Madagascar, Nov. 12, 1924
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Algeria				July 1-Dec 31, 1924 Cases, 409. Jan 1-20, 1925. Cases, 107.
Algiers	Jan 1-31	5		
Arabia:				
Aden	Jan 25-Feb 21	5		Imported.
Bolivia:				
La Paz	Nov 1-Dec 31	20	11	
Do	Jan 1-31		5	
Brazil:				
Pernambuco	Nov 9 Jan 3	100	27	
Do	Jan 4-17	22	12	
British East Africa.				
Kenya—				
Mombasa	Jan 18-24	1		
Uganda—				
Entebbe	Oct 1-31	4		
British South Africa:				
Northern Rhodesia	Oct 28-Dec. 15	57	2	
Do	Jan. 27-Feb. 2	3		Natives.
Southern Rhodesia	Jan 29 Feb 4	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 27, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Canada:				
British Columbia—				
Vancouver	Dec. 14-Jan 3	32		
Do	Jan 4-Mar 7	223		
Victoria	Jan. 18-Feb. 7	2		
Manitoba—				
Winnipeg	Dec. 7 Jan 3	14		
Do	Jan 4-Feb. 27	30		
New Brunswick—				
Bonaventure and Gaspe Counties.	Jan. 1-31	1		
Northumberland	Feb. 8-14	1		County.
Ontario				Nov 30-Dec. 27, 1924 Cases, 33.
Hamilton	Jan 24-30	1		Dec 28, 1924, to Feb 28, 1925: Cases, 41; deaths, 1
Ceylon				July 27-Nov 29, 1924 Cases, 27; death, 1.
Colombo	Jan. 18-Feb. 7	4		
China:				
Amoy	Nov. 9-Feb. 7			Present.
Antung	Nov. 17-Dec. 28	5		
Do	Jan 5-Feb. 8	10	1	
Foochow	Nov 2-Jan. 27			Do.
Hongkong	Nov. 9-Jan. 3	6	2	
Do	Jan. 4-17	4	2	
Manchuria—				
Harbin	Jan 15 21	1		
Nanking	Jan 4 17			Do.
Shanghai	Dec 7-27	1	2	
Do	Jan 18-24	1		
Do	Feb 1-14	3	4	Deaths among Chinese
Chosen:				
Seoul	Dec. 1-31	1		
Czechoslovakia				April-June, 1924 Cases, 1, occurring in Province of Moravia.
Ecuador:				
Guayaquil	Nov 16-Dec 15	4		
Egypt:				
Alexandria	Nov 12 Dec. 31	10		
Do	Jan. 8-28	8		
Esthonia				Dec 1-31, 1924 Cases, 2.
France				July-December, 1924: Cases, 81.
St. Malo	Feb 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis.
Germany				June 29-Nov 8, 1924: Cases, 7.
Frankfort-on-Main	Jan 1-10	1		
Gibraltar	Dec 8-14	1		
Gold Coast				July September, 1924. Cases, 82; deaths, 1.
Great Britain:				
England and Wales	Nov 23-Jan. 3	472		
Do	Jan. 4-Feb 28	1,085		
Newcastle-on-Tyne	Jan. 18-Feb. 21	9		
Greece				January-June, 1924. Cases, 170; deaths, 27
Do				July-December, 1924: Cases, 88; deaths, 26.
Saloniki	Nov. 11-Dec 22	3		
India				Oct 19, 1924, to Jan. 3, 1925: Cases, 12,564; deaths, 2,857. Jan 4-17, 1925: Cases, 5,089; deaths, 1,011.
Bombay	Nov. 2-Jan. 3	30	18	
Do	Jan 4-31	72	37	
Calcutta	Oct. 26-Jan. 8	307	170	
Do	Jan. 4-31	359	230	Mar. 5, 1925: Epidemic.
Karachi	Nov. 16-Jan. 3	16	2	
Do	Jan. 4-Feb. 14	52	6	
Madras	Nov. 16-Jan. 3	122	48	
Do	Jan. 4-Feb. 14	285	90	
Rangoon	Oct. 26-Jan. 3	86	28	
Do	Jan 4-31	196	34	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 223; deaths, 76.
Province—				
Anam	Aug. 1-Sept. 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov 16-Jan. 3	17	5	Including 100 sq. km. of surrounding country.
Do	Jan. 4-10	3	1	
Do	Jan. 25-31	5	2	Do.
Tonkin	Aug. 1-Sept. 30	19	7	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 27, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Iraq	June 29-Dec. 13	137	66	
Bagdad	Nov 9-Dec. 27	2	1	
Italy				June 29-Dec 27, 1924 Cases, 63.
Jamaica				Nov. 30, 1924-Jan. 3, 1925 Cases, 50. Reported as alastrim.
Do				Jan. 4-31, 1925. Cases, 43. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim.
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Nagasaki	Feb. 9-15	3		
Java:				
East Java—				
Pasoeroean	Oct 26-Nov. 1	9	1	
Do	Nov 12-19			Epidemic in two native villages.
Soerabaya	Oct. 19-Dec. 31	685	212	
West Java				
Batam	Oct 14-20	2		
Batavia	Oct. 21-Nov 14	2		
Do	Dec. 20-Jan 2	19	4	
Cheribon	Oct 14-Nov. 24	15		
Pekalongan	do	22		
Do	Dec. 25-31	3		Province.
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924. Cases, 5.
Mexico				
Durango	Dec 1-31		5	
Do	Jan. 1-Feb. 28		10	
Guadalajara	Dec 23-29		1	
Do	Jan 6-12		1	
Do	Mar 3-9		1	
Mexico City	Nov 23-Dec. 27	5		
Do	Jan 11-Feb. 14	9		
Monterey				Jan 24, 1925 Outbreak. Mar. 14, 1925, present
Salina Cruz	Dec. 1-31	1	1	
Saltillo	Feb. 22-28		1	
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-Feb. 28	40	15	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan 5-Feb 15		25	
Do	Feb 22-Mar. 8		8	
Villa Hermosa	Dec. 28-Jan 10			Present. Locality, capital, State of Tobasco.
Nigeria				January-June, 1924 Cases, 357; deaths, 87
Do				July-November, 1924: Cases, 87; deaths, 25.
Persia:				
Teheran				Sept 23-Dec. 21, 1924: Deaths, 12
Peru:				
Arequipa	Nov 24-30		1	
Poland				Sept. 21-Nov 29, 1924: Cases, 19; deaths, 2
Do				Nov. 30-Dec. 20, 1924. Cases, 10.
Portugal				
Lisbon	Dec. 7-Jan. 3	17		
Do	Jan 4-Feb. 7	45		
Oporto	Nov 30-Dec. 27	3	2	
Do	Jan. 11-17	1		
Russia				January June, 1924: Cases, 9,683; July-September, 1924: Cases, 1,251.
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan. 18-31	4	6	
Spain:				
Barcelona	Nov. 27-Dec 31		5	
Cadiz	Nov. 1-Dec. 31		51	
Do	Jan. 1-31		9	
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-Feb. 28		76	
Valencia	Nov. 30-Dec. 6	2		
Do	Feb. 15-21	2		
Switzerland:				
Lucerne	Nov. 1-Dec. 31	19		
Do	Jan. 1-31	24		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924 to March 27, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Syria:				
Aleppo	Nov 23-Dec. 27	13		
Do	Jan 4-Feb. 14	55	17	
Damascus	Jan. 6-13	2		
Tripoli:				
Tripoli	July 14-Dec 12	52		
Tunis:				
Tunis	Nov. 25-Dec. 29	42	35	
Do	Jan. 1-14		29	
Do	Jan. 22-Mar. 3		149	
Turkey.				
Constantinople	Dec. 13-19	5		
Union of South Africa				Nov. 1-Dec 31, 1924: Cases, 14.
Cape Province—				
De Aar District	Jan. 25-31			Outbreak at railway camp.
Do.	Nov. 9-Jan. 17			Outbreaks.
Orange Free State	Nov 2-8			Do.
Ladybrand District	Jan. 15-31			Outbreak, on farm.
Transvaal	Nov 9-Jan. 10			Outbreaks
Uruguay				January-June, 1924. Cases, 101; deaths, 2.
Do				July-October, 1924. Cases, 45; deaths, 4.
On vessel:				
S. S. Habana	Feb 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St Malo, France, from Sfax, Tunis; believed to have imported smallpox infection.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1894: Cases, 101; deaths, 14.
Algiers	Nov 1-Dec. 31	5	1	
Do	Jan 1-31	3	3	
Bolivia:				
La Paz	Nov 1-Dec. 31	3		
Do	Jan 1-31	2		
Bulgaria				January-June, 1924: Cases, 101; deaths, 28.
Do				July-October, 1924: Cases, 5.
Chile:				
Concepcion	Nov. 25-Dec 1		1	
Do	Jan. 6-12		2	
Iquique	Nov 31-Dec 1		2	
Do	Feb. 1-7		1	
Talcahuano	Nov. 16-Dec. 20		5	
Do	Jan. 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-Feb. 14		9	
Chosen:				
Seoul	Nov. 1-30	1	1	
Czechoslovakia				December, 1924: Cases, 5.
Egypt				
Alexandria	Dec. 3-9	1	1	
Cairo	Oct. 1-Dec. 23	13	8	
Esthonia				Dec. 1-31, 1924: Cases, 5.
France				July-October, 1924: Cases, 7.
Gold Coast				Oct. 1-31, 1924: 1 case.
Greece				May-June, 1924: Cases, 116; deaths, 8
Do				July-December, 1924: Cases, 40; deaths, 4.
Saloniki	Nov. 17-Dec. 15	3	2	
Do	Jan. 25-31	1		
Japan				Aug. 1-Nov. 15, 1924: Cases, 2.
Latvia				October-December, 1924: Cases, 30.
Lithuania				August-October, 1924: Cases, 15; deaths, 1.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to March 27, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Mexico:				
Durango	Dec 1-31		1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District
Do	Jan. 11-Feb. 14	40		Do.
Morocco				November, 1924. Cases, 5.
Palestine				Nov 12-Dec 8, 1924: Cases, 7.
Ekron	Dec. 23-29	1		
Jerusalem	do	2		
Do	Jan 20-26	1		
Mikveh Israel	do	1		
Ramleh	Feb 10-16	1		
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept 28-Dec 20, 1924: Cases, 542; deaths, 33
Portugal				
Lisbon	Dec 29-Jan 4		2	
Oporto	Jan 4-Feb. 7	2		
Rumania				January-June, 1924: Cases, 2,906; deaths, 328
Do				July-August, 1924: Cases, 89; deaths, 12.
Constanza	Dec. 1-10	1		
Russia				Jan 1-June 30, 1924: Cases, 92,000 July-Sept, 1924: Cases 5,225
Leningrad	June 29-Nov. 22	12		
Spain				
Madrid	Year 1924		3	
Malaga	Dec 21-27		1	
Sweden				
Goteborg	Jan 18-24	1		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Turkey:				
Constantinople	Nov. 15-Dec 19	6	1	
Do	Jan. 2-22	6		
Do	Feb. 1-7	1	1	
Union of South Africa				Nov 1-Dec 31, 1924 Cases, 345; deaths, 87.
Cape Province	Nov 1-Dec. 31	126	24	Dec. 21, 1924-Jan 17, 1925: Outbreaks.
East London	Nov. 16-22	1		
Do	Jan 18-24	1		
Natal	Nov. 1-Dec 31	130	50	
Do	Jan. 18-24			Outbreaks.
Orange Free State	Nov. 1-Dec. 31	59	8	Jan. 11-17, 1925: Outbreaks.
Transvaal	do	30	5	
Yugoslavia				Aug 3-Oct 18, 1924: Cases, 17; deaths, 2.
Belgrade	Nov. 24-Dec. 28	5		

YELLOW FEVER

Gold Coast	October-November, 1924.	4	4	
Salvador:				
San Salvador	June-October, 1924.	77	28	Last case, Oct. 22, 1924.

X

TREASURY DEPARTMENT

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SPECIAL ARTICLES

Report of Advisory Committee on Drinking Water Standards

Division of Venereal Diseases, July 1–December 31, 1924

WASHINGTON
GOVERNMENT PRINTING OFFICE
1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

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PUBLIC HEALTH REPORTS

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REPORT OF ADVISORY COMMITTEE ON OFFICIAL WATER STANDARDS

A committee composed of representatives from Government departments and scientific associations and of eminent sanitarians was appointed by the Surgeon General in May, 1922, to review the Treasury Department standard for drinking water on interstate common carriers, promulgated by the Secretary of the Treasury October 21, 1914,[1] and to recommend a standard or standards, based on specific methods of laboratory analysis and field surveys, to be applicable to all classes of water supplies coming within the jurisdiction of the interstate quarantine regulations of the United States. The following is the report of the committee:

Report of Advisory Committee on Standards for Drinking Water Supplied to the Public by Common Carriers in Interstate Commerce

The task referred to this committee by the Surgeon General of the Public Health Service is to formulate definite specifications which may be used by the Public Health Service in the administrative action which it is required to take upon the supplies of drinking water offered by common carriers for the use of passengers carried in interstate traffic. The recommendations submitted apply, therefore, only to this special case, and are not proposed for more general application.

Since the purpose of the supervision which the Public Health Service exercises over these water supplies is to safeguard the health of the public, the examinations and specific requirements herein proposed have reference chiefly to forming a judgment of safety, and are designed especially to afford protection against the most serious danger which is associated with water supplies, namely, that of infection with typhoid fever and other diseases of similar origin and transmission. Less emphasis has been placed upon physical and chemical characteristics affecting the acceptability of water with respect to appearance, taste, and odor, because these are matters of less fundamental importance and because, in actual experience, the water supplies which come under consideration, if satisfactory from

[1] Public Health Reports, vol. 29, No. 45, Nov. 6, 1914. Reprint No. 232.

the standpoint of safety, will usually be found satisfactory with respect to physical and chemical characteristics.

The first step toward the establishment of standards which will insure the safety of water supplies conforming to them is to agree upon some criterion of safety. This is necessary because "safety" in water supplies, as they are actually produced, is relative and quantitative, not absolute. Thus, to state that a water supply is "safe" does not necessarily signify that absolutely no risk is ever incurred in drinking it. What is usually meant, and all that can be asserted from any evidence at hand, is that the danger, if any, is so small that it can not be discovered by available means of observation. Nevertheless, while it is impossible to demonstrate the absolute safety of a water supply, it is well established that the water supplies of many of our large cities are safe in the sense stated above, since the large populations using them continuously have, in recent years, suffered only a minimal incidence of typhoid fever and other potentially water-borne infections. Whether or not these water supplies have had any part whatsoever in the conveyance of such infections during the period referred to is a question that can not be answered with full certainty; but the total incidence of the diseases has been so low that even though the water supplies be charged with responsibility for the maximum share which may reasonably be suggested, the risk of infection through them is still very small compared to the ordinary hazards of everyday life.[1]

The committee has, therefore, taken this better class of municipal water supplies as its standard of comparison with respect to safety and proposes, as a fair objective, that the water supplies furnished by common carriers to passengers in interstate traffic be of comparable safety. As regards protection of the traveling public, such a standard is fair, since it implies that the use of the water supplied to them in travel shall not add to the almost negligible risk which is ordinarily incurred at home by those who habitually use water supplies of somewhat better than average quality. From the standpoint of the carriers also, this standard is believed to be fair and reasonable, since it refers to water supplies which are actually obtainable in all sections of the country and from a great variety of sources.

The next and principal task of the committee has been to set up objective requirements which will conform to this general standard of safety; that is, requirements which will ordinarily be fulfilled by the municipal supplies of epidemiologically demonstrated safety which constitute the standard of comparison, but will exclude supplies of less assured safety. Since there is no single and measurable charac-

[1] This evidence actually proves only that the water supplies in question have been generally "safe" in the past during the period of low prevalence of infection. The likelihood that they will continue to be equally or more safe in the future must, of course, be reckoned from other considerations, such as the probability of future change in the pollution of their watershed, the character and consistency of their protection, etc

teristic of water supplies which bears any known and constant relation to actual safety, the standard recommended is composite, including certain requirements relative to the source and protection of the water supplies in question as indicated by a careful sanitary survey, and certain other requirements relative to bacterial content as shown by standard tests.

It is anticipated that little objection will be raised to the requirements laid down as to source and protection, at least to their general intent, because they are based upon well recognized principles of sanitary engineering, and because they are necessarily stated in general terms which imply a rather broad consideration of each supply from all angles and the exercise of discretion in forming an ultimate judgment of its fitness. The bacteriological standard, on the other hand, is stated in definite quantitative terms. This is unavoidable if such a standard be included at all, since the methods of bacteriological examinations are quantitative and yield results in the definite terms used in the standard. However, in view of the well-recognized principle that the significance of bacteriological examinations is variable, and must be interpreted with due regard to all other facts known about the particular water supply in question, the objection may be raised that a rigid application of this standard will arbitrarily exclude a considerable number of water supplies which conform to all other requirements and which competent opinion will consider to be quite safe. The validity of this criticism is recognized, but it is not considered of sufficient force to require or justify the lowering of the bacteriological standard proposed. This viewpoint appears proper when it is recognized that the definite terms of bacteriological quality in which this standard is expressed represent only agreement as to safety, and not as to limiting values beyond which demonstrable or even presumptive danger lies. Between the point on which the committee is in agreement as to the assured safety of water supplies and the point at which agreement could be reached as to their dangerous quality is a wide zone. Within this zone lie many water supplies which, if considered in the light of available evidence from all angles, are believed to be as safe as other supplies which conform to all the bacteriological requirements.

The committee, therefore, considers it preferable to recommend that in actual practice the bacteriological standard be applied, as are other requirements, with some latitude; in other words, that supplies which, on rigid inspection are found to be satisfactory in other respects but fail to meet the bacteriological standard, may be accepted in the discretion of the certifying authority. In view of the character of the personnel entrusted with the responsibility for investigation and administrative action, the committee feels assured that this procedure is preferable to the alternative of rigid and automatic application.

Proposed Standards

The requirements recommended are as follows:

I. AS TO SOURCE AND PROTECTION

(1) The water supply shall be—

(*a*) Obtained from a source free from pollution; or

(*b*) Obtained from a source adequately protected by natural agencies from the effects of pollution; or

(*c*) Adequately protected by artificial treatment.

(2) The water supply system, including reservoirs, pipe lines, wells, pumping equipment, purification works, distributing reservoirs, mains and service pipes, shall be free from sanitary defects.

NOTE: 1. *Natural agencies* affording more or less complete protection against the effects of pollution are, in surface waters: dilution, storage, sedimentation, the effects of sunlight and the associated biological processes tending to natural purification; and, in the case of ground waters, percolation through the soil. Important items in the natural purification of ground water are the character and depth of the strata penetrated.

2. *Adequate protection* by artificial treatment implies that the method of treatment is appropriate to the source of supply; that the works are of sufficient capacity, well constructed, skillfully and carefully operated. The evidence that the protection thus afforded is adequate must be furnished by frequent bacteriological examinations and other appropriate analyses, showing that the purified water is of good and reasonably uniform quality, a recognized principle being that irregularity in quality is an indication of potential danger.

3. *Sanitary defect* means faulty condition, whether of location, design, or construction of works, which may regularly or occasionally cause the water supply to be polluted from an extraneous source, or fail to be satisfactorily purified. (See examples cited in Appendix I.)

An outline of the scope of sanitary survey ordinarily required in the investigation of a water supply to determine whether or not it conforms to these requirements is given in Appendix I.

II. AS TO BACTERIOLOGICAL QUALITY

(1) Of all the standard (10 c. c.) *portions* examined in accordance with the procedure specified below, not more than 10 per cent shall show the presence of organisms of the *B. coli* group.

(2) Occasionally three or more of the five equal (10 c. c.) *portions* constituting a single standard *sample* may show the presence of *B. coli*. This shall not be allowable if it occurs in more than—

(*a*) Five per cent of the standard samples when twenty (20) or more samples have been examined;

(*b*) One standard sample when less than twenty (20) samples have been examined.

NOTE.—It is to be understood that in the examination of any water supply the series of samples must conform to *both the above*

requirements, (1) and (2). For example, where the total number of samples is less than six, the occurrence of positive tests in three or more of the five portions of any single sample, although it would be permitted under requirement (2), would constitute a failure to meet requirement (1).

Definition.

The B. coli group is defined, for the purposes of this test, as in Standard Methods of Water Analysis, American Public Health Association, New York, 1923, and the procedures for demonstration of organisms of this group shall conform to those of the "completed test" as therein specified.

The standard portion of water for this test shall be ten cubic centimeters (10 c. c.).

The standard sample for this test shall consist of five (5) standard *portions* of ten cubic centimeters (10 c. c.) each.

Some general considerations bearing upon the bacteriological standard adopted are discussed in Appendix II, and the quantitative interpretation of fermentation tests is discussed in Appendix III.

III. AS TO PHYSICAL AND CHEMICAL CHARACTERISTICS

The water should be clear, colorless, odorless, and pleasant to the taste, and should not contain an excessive amount of soluble mineral substances nor of any chemicals employed in treatment.

NOTE.—Appropriate tests for the quantitative determination of physical and chemical characteristics are given in Appendix IV of this report, together with the values which should ordinarily not be exceeded when these tests are applied. It is not intended, however, to imply that a complete chemical examination, including all these tests, is to be required in the case of every water supply offered. Under ordinary circumstances simple evidence that the water is generally acceptable in appearance, taste, and odor will be considered sufficient; and detailed analysis will be required only when there is some presumption of unfitness by reason of physical or chemical characteristics. Where such analysis shows the presence of lead (Pb), copper (Cu), or zinc (Zn) in excess of the limits specified in Appendix IV, this shall constitute ground for rejection of the supply. Failure of a supply to conform in other respects to the requirements proposed in Appendix IV need not be considered ground for rejection unless it be found, on inquiry, that another supply of equal safety and more acceptable physical and chemical characteristics is readily available.

Appendix I

SCOPE OF REQUISITE INFORMATION AS TO SOURCE AND PROTECTION

In order that the administrative authorities may have the necessary information upon which to base their action, it is requisite that each water supply coming under consideration should be carefully studied with reference to its source and protection. The precise scope of

such study and of the report thereon will vary according to the circumstances existing in each individual case, and can not be fully specified in any general terms. The general procedure should, however, be substantially as follows:

1. *A sanitary survey of the water supply should be made by a competent person.*—The reliability of the data collected will depend largely upon the competence of the person by whom the survey is made, and the careful selection of personnel for this duty is of primary importance. The qualifications which constitute "competence" can not be precisely defined; but, in general, the person making the survey should have received a technical education equivalent to that given in a course in sanitary engineering in a college of engineering or school of public health; should have a broad knowledge of the sanitary features and physical facts concerning water supplies for potable use; and should understand the essential features of water purification plants, their operation and methods of testing.

2. *A brief general description of the water supply should be submitted.*—This should include the name of the owner of the supply and a brief description of sources and catchment areas, of the storage available and of the plant, with date of installation of main works, and record of subsequent extensions or alterations.

3. *A brief summary of the pertinent facts relating to the sanitary condition of the water supply, as revealed by the field survey, should be submitted.*—The following paragraphs will serve to indicate the general scope of the survey. However, not all of the items would be pertinent to any one supply, and in some cases items not in the list would be important.

(A) SMALL GROUND WATER SUPPLIES

Nature of soil and underlying porous strata, whether of clay, sand, or gravel.

Nature of rock penetrated, noting especially existence of limestone.

Depth to strainers.

Slope of water table, as indicated presumptively but not certainly by slope of surface ground.

Nature, distance, and direction of sources of pollution.

Possibility of surface drainage entering the supply.

Methods of protection.

(B) LARGE GROUND WATER SUPPLIES

General character of local geology.

Extent of drainage area likely to contribute water to the supply.

Size and topography of catchment area.

Nature of soil and underlying strata, whether clay, sand, gravel, rock (especially limestone).

Depth to strainers.

Population on the drainage area.

Nature, distance, and direction of local sources of pollution.

Possibility of surface drainage entering the supply; methods of protection.

Methods employed for protecting the supply against pollution, by sewage treatment, waste disposal, and the like.

Protection of collecting well at top and on sides; protection other than check valve or gate against back flow of drain, etc.

Availability of an impure emergency supply.

Use of tile pipes or other conduits not tight, where ground water may be contaminated.

Examples of sanitary defects in ground water supplies, are—caves, sink holes or abandoned borings used for surface drainage or sewage disposal in vicinity of the source. Casing of tubular wells leaky or not extended to sufficient depth, or not extended above ground or floor of pump room, or not closed at top; or casing improperly used as suction pipe. Collecting well or reservoir subject to back-flow of polluted water through improper drain.

Source of supply or structures subject to flooding.

(C) SURFACE WATER SUPPLIES, UNFILTERED

Nature of surface geology; character of soils and rocks.

Character of vegetation; forests; cultivated land, etc.

Population and sewered population per square mile of catchment area.

Methods of sewage disposal, whether by diversion from watershed or by treatment.

Character and efficiency of sewage treatment works.

Proximity of sources of fecal pollution to intake of water supply.

Proximity of sources and character of industrial wastes.

Nominal period of detention in reservoir or storage basin.

Probable minimum time required for water to flow from sources of pollution to reservoir and through reservoir to intake.

Shape of reservoir, with reference to possible currents of water, induced by wind, from inlet to water-supply intake.

Measures taken to prevent fishing, boating, swimming, ice cutting, etc.

Efficiency and constancy of policing.

Disinfection of water; kind and adequacy of equipment; duplication of parts; effectiveness of treatment.

Examples of sanitary defects, are—

Improper location of intake with respect to bottom of reservoir and current.

Intake exposed and accessible to trespassers.

(D) SURFACE WATER SUPPLIES, FILTERED

Size, topography, and surface geology of catchment area.

Population per square mile of catchment area.

Nature of principal sources of pollution, and distance from intake in miles and in time of travel, with special reference to sewered population.

Methods of sewage treatment; effectiveness of process, and uniformity of results.

Character of raw water as to turbidity, color, alkalinity, hardness, iron, etc., and as to variations in quality from time to time.

Rated capacity of filter plant in Mgd., average water consumption in Mgd., rated capacity of pumps.

Capacity of sedimentation or coagulation basins, in Mgd.

Number of filter beds, net area of sand surface, effective size of sand, etc.

Coagulation, if any; kind and amount of chemical used.

Aeration, if any; at what point in purification system.

Disinfection, if any; kind and adequacy of equipment.

Storage of filtered water, whether in open or closed basin.

Adequacy of filter control; continuous or part time attendance.

Frequency and character of analyses of samples of water.

Examples of sanitary defects are—

Existence of by-passes through which unfiltered water may be delivered to the distribution system without proper supervision.

Inadequacy of works, necessitating excessive overloading or by-passing.

Inadequate protection of purified water.

(E) PUMPING STATION

Number and capacity of pumps, including reserve; condition of equipment and method of operation.

Examples of sanitary defects are—

Leaky suction pipe.

Pump not self-priming; unsafe water used for priming.

Suction well unprotected from surface or subsurface pollution.

Suction well subject to pollution through back-flow of polluted water through drain.

(F) DISTRIBUTION SYSTEM

Area and population supplied.

Type of distribution system; whether by gravity, direct pumping indirect pumping, etc.

Use, location and capacity of reservoirs and standpipes.

Adequacy of distribution system.

Examples of sanitary defects, are—

Existence of cross-connections between primary supply and secondary supply of unsafe quality, for fire protection, emergency or industrial supply.

Return to the system of any water used for cooling, hydraulic operations, etc.

Inadequate protection of distribution reservoir.

Intermittent service, resulting in reduced or negative pressure in distribution system.

New connections of pipe lines joined to the system without prior disinfection of pipes.

Existence of tile or other leaky pipe in distribution system.

Use of lead pipe for house services with water of corrosive quality.

4. The agent who makes the sanitary survey should submit his personal opinion as to the sanitary character of the supply based on his field survey.

Appendix II

THE BACTERIOLOGICAL STANDARD

The bacteriological examinations which have come to be generally recognized as of most value in the sanitary examination of water supplies, are—

(1) The count of total colonies developing from measured portions planted on gelatin plates and incubated for 48 hours at 20°C.

(2) A similar count of total colonies developing on agar plates incubated for 24 hours at 37°C (or in some laboratories incubated 48 hours at 20°C).

(3) The quantitative estimation of organisms of the *B. coli* group by applying specific tests to multiple portions of measured volume.

Of these three determinations, the test for organisms of the *B. coli* group is almost universally conceded to be the most significant, because it affords the most nearly specific test for the presence of fecal contamination. The committee has, therefore, agreed, after full consideration, to include only this test in the bacteriological standard recommended, believing that neither the 37°C nor the 20°C plate count would add information of sufficient importance to warrant complicating the standard by including them in the required examination. The omission of plate counts from the standard is not to be construed, however, as denying or minimizing their importance in routine examinations made in connection with the control of purification processes. On the contrary, the committee wishes to record its opinion that one or both plate counts are of definite value in such examinations, and to emphasize that it is chiefly in the interest of simplicity that they have been omitted from the standard here proposed.

For the purposes of this standard the *B. coli* group is defined as in the Standard Method of Water Analysis issued by the American Public Health Association, 5th edition, 1923, p. 100, namely, "as including all nonspore-forming bacilli which ferment lactose with gas formation and grow aerobically on standard solid media."

In accordance with this definition, it is recommended that the procedure required for demonstration of the *B. coli* group be that prescribed in Standard Methods of Water Analysis (5th ed., 1923) for the so-called "completed test," and that this reference be considered to apply to all details of technique, including the selection and preparation of apparatus and culture media, the collection and handling of samples, and allowable intervals between collection and examination. Since the standard procedure cited in this reference does not require differentiation between the various forms or types which are included under the general definition of the *B. coli* group as given above, it has not seemed advisable, in the present state of knowledge, to require such differentiation in the application of this standard.

The principles involved in the quantitative interpretation of fermentation test in multiple portions of equal volume and in portions constituting a geometric series (e. g., 10 c. c., 1 c. c., 0.1 c. c., etc.) are fully discussed in Appendix III. As is therein demonstrated, the testing of multiple portions of equal volume affords a more precise measure of the density of *B. coli* within a relatively narrow range of variation than does the testing of portions in geometric series. Therefore, since the waters which will be offered for certification will, for the most part, represent only a narrow range of moderate pollution, it is required that the examination of each sample shall consist of the separate testing of five equal portions of 10 c. c. each.[3] There is, of course, no essential reason why the number of portions tested should be five, rather than some larger number, except that it is necessary to limit the labor and materials required, and five portions are considered sufficient for such precision as is ordinarily requisite.

With reference to the total number of samples which must be submitted for examination, and the intervals at which they must be collected, it has not seemed practicable to lay down any hard and fast requirements. It is obviously desirable, from the standpoint of precision and significance of results, to examine a large number of samples collected at frequent, and preferably at regular intervals. But against the advantages of frequent and regular sampling must be balanced its practical difficulties and the consideration that the number and spacing of samples required depend upon the quality of the supply in question, the nature of its source, and the character and consistency of its protection. For example, less frequent examinations would be required in the case of water from a deep well, apparently exposed to no dangerous pollution and showing no evidence of contamination on occasional examination, than

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[3] It is, however, advisable, especially in the examination of waters of unknown quality, or which may be suspected to be highly polluted, to make simultaneous tests in portions of a geometric series, ranging from 10 c. c. to 0.1 c. c. or less.

in the case of a supply drawn from a dangerously polluted stream and depending upon consistently maintained artificial treatment for its protection. All that it is considered proper to require, then, as to the number and spacing of samples examined is that they shall be sufficient, in the judgment of the certifying authority, to indicate the quality of the supply, with due regard to all facts known as to its source and protection.

In accordance with these principles, the first requirement stated in the standard, namely, that "not more than 10 per cent of all the 10 c. c. portions tested shall show the presence of *B. coli*" may be interpreted as implying that the mean density of *B. coli* shall not exceed about 1 per 100 c. c. The second clause of the standard, which specifies that not more than 5 per cent of samples tested (or not more than one sample if the whole number tested be less than twenty) shall show the presence of *B. coli* in three or more of the five 10 c. c. portions, is more complex in its implications and more difficult to explain. It recognizes that, according to the laws of chance, this result would occur in a certain small proportion of the samples tested, even though the mean density of *B. coli* in the whole body of water tested actually remained constant at about 1 per 100 c. c. or less, and consequently that it warrants no inference of actual fluctuations in density unless it occurs with considerably greater frequency than would be expected according to the theory of chance occurrences. A much more frequent occurrence, sufficient to indicate occasional high pollution, is believed, however, to be an omen of potential danger, even though the average quality of the water should be satisfactory (that is, in conformity to the first provision of the standard). This clause of the standard undertakes, therefore, to set a limit to the allowable frequency of positive results in three or more portions of any sample. It is necessary, in so doing, to recognize that water supplies actually do vary in pollution from day to day, and that in many instances the series of tests which will be considered may be small, hence the limit (5 per cent) is set at a frequency which is much higher than might reasonably be expected in a large series of samples from a water in which the actual density of *B. coli* never greatly exceeded 1 per 100 c. c.

In the bacteriological standard which is proposed the committee has undertaken to establish two limiting values to the density of *B. coli*, one limit applying to the mean density as calculated from the entire series of tests made and one to the range and frequency of occasional deviations from this mean. The mathematical principles applied to the interpretation of fermentation tests with reference to these two limits are discussed in Appendix III, where it is demonstrated:[3]

[3] These demonstrations are, of course, subject to the assumption that the distribution of B. coli in the water tested is random, which is an entirely reasonable assumption.

1. That where 10 per cent of the 10 c. c. portions tested are positive, the most probable density of *B. coli* is about 1 per 100 c. c., subject to a probable error which is proportionate to the number of portions tested.

2. That given this or a lesser mean density, consistently maintained in the water from which the samples are drawn, less than 1 per cent of the samples in a large series would be expected to show *B. coli* in three or more of the five 10 c. c. portions tested.

As to the reasons for specifying these particular limiting values rather than some other values, either higher or lower, it is obvious that the assignment of any definite limits of bacterial content as a criterion of the safety of water supplies of diverse origin and history must necessarily be an arbitrary procedure, because the relation which the determinable bacterial content bears to the actual safety of a water supply is variable and to some extent indeterminate. Therefore, all that may be claimed for the standards proposed is that, in the judgment of this committee, they are reasonable; that is, are consistent with the other requirements specified as to source and protection of the water supplies in question, afford an ample guarantee of safety, and can be met without too costly and burdensome effort.[4]

Appendix III

B. COLI DENSITIES AS DETERMINED FROM VARIOUS TYPES OF SAMPLES

By Lowell J. Reed, Ph. D., Associate Professor of Biometry and Vital Statistics, The Johns Hopkins University, School of Hygiene and Public Health

(Prepared by request of the committee in connection with the work of the Subcommittee on Bacteriological Standards)

The fundamental formula for the determination of the probabilities of occurrence of different densities of *B. coli* from the results of any of the usual sampling procedures has been clearly developed in an article by Greenwood and Yule (1) on bacteriological water analysis.[5] The following quotation from this article gives the derivation of this basic formula:

"If in the water from which samples of, say, 1 c. c. each are drawn, there exist *B.* bacilli in all in a total volume of *W.* c. c. of water, then, the distribution of bacilli being assumed to be random, the probably numbers of c. c. with 0, 1, 2, 3, — bacilli in each are given by the binomial expansion of

$$\left(\frac{W-1}{W}+\frac{1}{W}\right)^{B} \tag{1}$$

[4] In connection with this last consideration, the committee has analyzed the records of daily examinations of a considerable number of municipal water supplies for the years 1919 to 1922 and finds that a substantial majority of them conform to both requirements of the standard.

[5] A previous treatment of this problem is that of McCrady (1915). See reference (2) in appended bibliography.

Since B and W are both very large indeed, (1) becomes, by a well-known transformation originally given by Poisson:

$$e^{-\lambda}\left(1+\lambda+\frac{\lambda^2}{\underline{|2}}+\frac{\lambda^3}{\underline{|3}}+\ldots\ldots\right) \tag{2}$$

where $\lambda=\frac{B}{W}$. The problem then reduces itself to that of determining the appropriate value of λ and the probable reliability of its determination."

Examination of equation (2) shows that the probability of a sample of 1 c. c. being found to be negative is $e^{-\lambda}$. The probability that a sample of N c. c. will be negative is therefore $e^{-N\lambda}$, and that it will be positive is $1-e^{-N\lambda}$. These probabilities must furnish the basis for the solution of any problem of determining *B. coli* densities from the results of sampling processes.

SAMPLES IN GEOMETRIC SERIES

The usual test in this country in water examination consists in taking a series of samples the sizes of which run in geometric progression as, for example, 100 c. c., 10 c. c., 1 c. c., 0.1 c. c., and 0.01 c. c. We shall now examine the probable densities of *B. coli* arising from the different cases which may occur in this sampling procedure.

The following solution for the case where the sample shows 100+, 10+, 1−, 0.1−, 0.01−, will illustrate the method of determining the probabilities in any case. For this particular result the probability that the density of *B. coli* falls between the values O and k is given by

$$P=\frac{\int_0^K (1-e^{-100\lambda})\;(1-e^{-10\lambda})\;e^{-\lambda}\;e^{-.1\lambda}\;e^{-.01\lambda}\;d\lambda}{\int_0^\infty (1-e^{-100\lambda})\;(1-e^{-10\lambda})\;e^{-\lambda}\;e^{-.1\lambda}\;e^{-.01\lambda}\;d\lambda}$$

$$\text{Now} \int_0^\infty (1-e^{-100\lambda})\;(1-e^{-10\lambda})\;e^{-\lambda}\;e^{-.1\lambda}\;e^{-.01\lambda}\;d\lambda=.8100018$$

Therefore the probability curve of densities is

$$y=1.234565\;(e^{-1.11\lambda}-e^{-11.11\lambda}\;e-{-101.11\lambda}+e^{-111.11\lambda})$$

The cases likely to arise in using the geometric series are as follows:

	100 c. c.	10 c. c.	1 c. c.	0.1 c. c.	0.01 c. c.
(a)	+	−	−	−	−
(b)	+	−	+	−	−
(c)	+	+	−	−	−
(d)	+	+	−	+	−
(e)	+	+	+	−	−

The above cases are listed in order according to the sizes of the most probable density. Cases (b) and (d) are commonly called

inconsistences, but, as will be seen in the following discussion, they lead to as logical curves as do the other cases.

The equations of the probability curves for these cases are as follows:

(a) $y = 12.344331\ (e^{-11.11\lambda} - e^{-111.11\lambda})$.

(b) $y = 113.36297\ (e^{-10.11\lambda} - e^{-11.11\lambda} - e^{-110.11\lambda} + e^{-111.11\lambda})$.

(c) $y = 1.234565\ (e^{-1.11\lambda} - e^{-11.11\lambda} - e^{-101.11\lambda} + e^{-111.11\lambda})$.

(d) $y = 12.470554\ (e^{-1.01\lambda} - e^{-1.11\lambda} - e^{-11.01\lambda} + e^{-11.11\lambda} - e^{-101.01\lambda} + e^{-101.11\lambda} + e^{-111.01\lambda} - e^{-111.11\lambda})$.

(e) $y = 0.1222331\ (e^{-.11\lambda} - e^{-1.11\lambda} - e^{-10.11\lambda} + e^{-11.11} - e^{-100.11\lambda} + e^{-101.11\lambda} + e^{-110.11\lambda} - e^{-111.11\lambda})$.

The curves of these equations are shown on Graph I. The modes for the curves are as follows:

Curve	Mode	Most probable number of B. coli per 1,000 c. c. of water
(a)	0.023	23
(b)	0.094	94
(c)	0.230	230
(d)	0.944	944
(e)	2.312	2,312

The rapid change in the modes of these curves shows that the yardstick employed in the case of the geometric series, for measuring the extent of *B. coli* pollution, has very coarse divisions. For this reason the series is suitable for grading waters that vary widely in the extent of pollution.

Another feature of interest in the geometric series is that the form of the probability curve of densities of *B. coli*, and the mode of the curve, are almost entirely determined by the two tubes where the results change from + to −. For example, if we have a sample showing 100+, 10+, 1−, 0.1−, 0.01−, and another sample about which our only information is that 10 c. c. is positive and 1 c. c. is negative, curves for the two cases are—

$y = 1.234565\ (e^{-1.11\lambda} - e^{-11.11\lambda} - e^{-101.11\lambda} + e^{-111.11\lambda})$.

$y = 1.1\ (e^{-\lambda} - e^{-11\lambda})$.

The forms of these curves are shown on Graph II, in which we see that the curves are not significantly different. The mode of the first one is at 0.23027, and of the second at 0.23979. Thus the additional information given by the terms 100+, and 0.1−, 0.01−, has no effect in determining the value of the mode and of its probable error in the case here considered. The same fact holds for all of the consistent cases, and is in harmony with the usual method of interpreting the results of the consistent cases. In the inconsistent cases, however, both changes of sign play a part in determining the most probable pollution and its probable error. These cases are shown

on Graph I as intermediate curves between two of the consistent cases, and it would be better to regard them as further subdivisions of the yardstick, having their own appropriate probabilities, than to treat them as inconsistencies.

CURVES ARISING FROM FIVE PORTIONS OF 10 C. C. EACH

The proposed standard involves a procedure wherein five tubes of 10 c. c. each are tested. The different types of single samples that may arise are given, with their equations and modes, in the following table:

Case	Number of tubes		Equation of probability curve	Mode	Most probable number of B. coli in 1,000 c. c.
	Negative	Positive			
a	5	0	$y=50\,e^{-30\lambda}$	0.000	0
b	4	1	$y=200\,e^{-40\lambda}\,(1-e^{-10\lambda})$	0.022	22
c	3	2	$y=300\,e^{-30\lambda}\,(1-e^{-10\lambda})^2$	0.051	51
d	2	3	$y=200\,e^{-20\lambda}\,(1-e^{-10\lambda})^3$	0.092	92
e	1	4	$y=50\,e^{-10\lambda}\,(1-e^{-10\lambda})^4$	0.161	161

The case of 5 positive portions out of 5 ten-c. c.'s tested leads to no determination of the probable pollution of the water.

The curves for these equations are shown on Graph III.

A comparison of the most probable number of *B. coli* per 1,000 c. c. for the above cases with the corresponding terms for the cases that arise in the geometric series method shows that we have in the proposed test a finer subdivision of the scale of pollution. We have, however, shortened our yardstick, so that it is not as suitable for measuring a wide range of pollution as is the geometric series of tests.

A question of greatest importance in determining the method to be used is that of the probable error of the results. In testing tubes of equal size, the most probable pollution and its probable error are easily determined by using the formulae below. If N tubes of 10 c. c. each are tested, n of these tubes giving negative results and m giving positive results, then the most probable number of *B. coli* per 10 c. c. is given by

$$\lambda = 2.302585 \log \frac{N}{N-m}$$

and the probable error of λ is given by

$$\text{P. E.}_{\lambda} = 1.553068 \sqrt{\frac{m}{N-n}}$$

These formulae are given by Greenwood and Yule in the article previously mentioned. Variations of them have been stated by several other writers.

Expressions for the most probable number of *B. coli* per unit of water, and for its probable error, can not be easily obtained in the case of the geometric series. We may, however, obtain some idea of the relative variability of the two methods of sampling by comparing single samples in two similar cases. In the case of 1 tube of 10 c. c. positive and 4 tubes of 10 c. c. each negative, the most probable pollution is 22 *B. coli* per 1,000 c. c. When, in testing by the geometric series, we have 100 c. c. positive and the remainder of the portions negative, the most probable number of *B. coli* per 1,000 c. c. is 23. Since the densities are practically identical in these two cases, we may compare their probability curves to determine which one has the greater variability. Turning to Graph IV, we see that the two curves have their modes, as stated, at 22 and 23. The curve for the samples taken according to the proposed method is much higher at its mode, and is much less broad in general than is the curve for the samples taken by the geometric series method. Thus the two samples indicate equal degrees of pollution, but the probable error to be ascribed to this degree of pollution is much less in the case of the proposed standard of five 10-c. c. portions than in the case of the more commonly used geometric series. This fact may also be brought out by deriving from each curve the probability that the number of *B. coli* per 1,000 c. c. is not greater than 80. For the proposed standard this probability is 0.869, whereas for the geometric series it is only 0.543.

THE PROPOSED STANDARD

The proposed standard places a limit on the mean pollution and also on the variability. It will, therefore, be of interest to examine both of these factors from the mathematical point of view.

Concerning the mean pollution the standard specifies that not more than 10 per cent of all the 10-c. c. standard portions examined shall show the presence of organisms of the bacillus coli group. For this limiting value we have the following equation expressing the probability that the water is polluted to any specified degree.

$$Y = A\ (e^{-90\lambda} - e^{-100\lambda})\ \frac{N}{10}$$

where

$$A = \frac{1}{\int_0^\infty (e^{-90\lambda} - e^{-100\lambda})\ \frac{N}{10}\, d\lambda}$$

and N is the total number of portions tested. The curves for the cases, $N=10$, and $N=50$, are plotted in Graph V. Most of the characteristics of this probability curve depend upon N. The position of the mode, that is, the most probable value of the pollution, is, however, independent of N, with a value of 10.5 *B. coli* per 1,000

c. c. This means that, when 10 per cent of the portions tested are positive the most likely pollution of the water is that expressed by a density of 10.5 *B. coli* per 1,000 c. c., or 1.05 per 100 c. c.

Although the position of the mode is independent of N, the height of the ordinate at the mode is not. This ordinate is a measure of the reliability of the predicted value of the density, the reliability increasing as the ordinate increases. The relationship between this ordinate and N, the number of portions, is shown in Graph VI. The curve indicates that it is well to have at least 100 portions in order that we may be out of the region of sharpest increase on this curve.

Another view of the increase in the reliability of the determination of the pollution with increasing N may be obtained by examining the distributions for the two cases shown on Graph V. It will be seen that the curve for $N=10$ is much more widely spread than is that for $N=50$.

Considering variability from another point of view, we may ask the following question: Assuming that the density of *B. coli* remains constant at the maximum limit set by the standard (10.5 *B. coli* per 1,000 c. c.), with what frequency should we expect to obtain, on the basis of simple sampling, the different results which may arise in a sample consisting of 5 portions of 10 c. c. each? Since the probability that a portion of 10 c. c. will be negative is given by $e^{-10\lambda}=0.9$, the required frequencies are given by the expansion of the binomial $(0.9+0.1)^5$. These frequencies are shown in the following table:

Number of + portions in sample (5 portions)	Per cent of samples having specified number of + portions	Per cent of samples having specified number of + portions or more
0	59.049	100 000
1	32.805	40.951
2	7.290	8 146
3	0 810	0.856
4	0.045	0.046
5	0.001	0 001

This table furnishes the basis of the second part of the proposed standard. We see that under the above assumption only 0.856 per cent of a given series of samples should by chance show three or more positive portions. The proposed standard specifies 5 per cent for this condition, thus allowing more variability than would be expected to arise from simple sampling.

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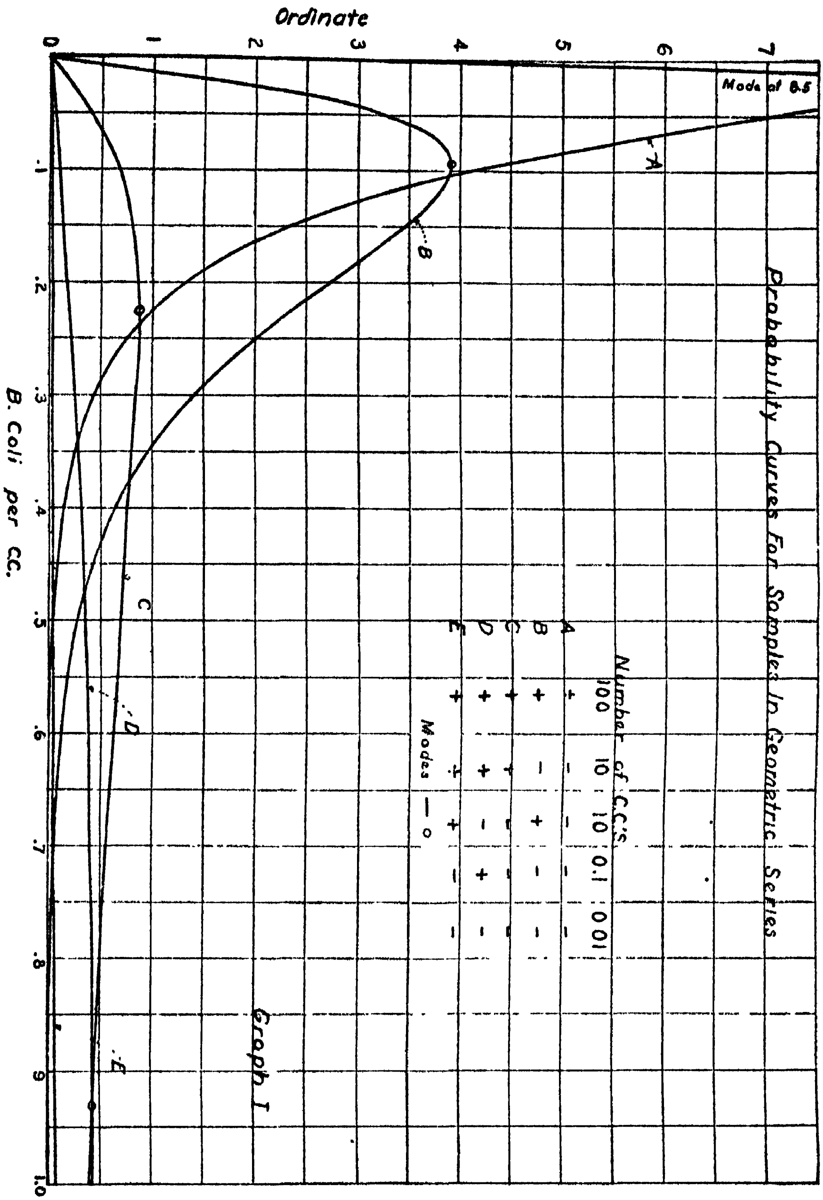
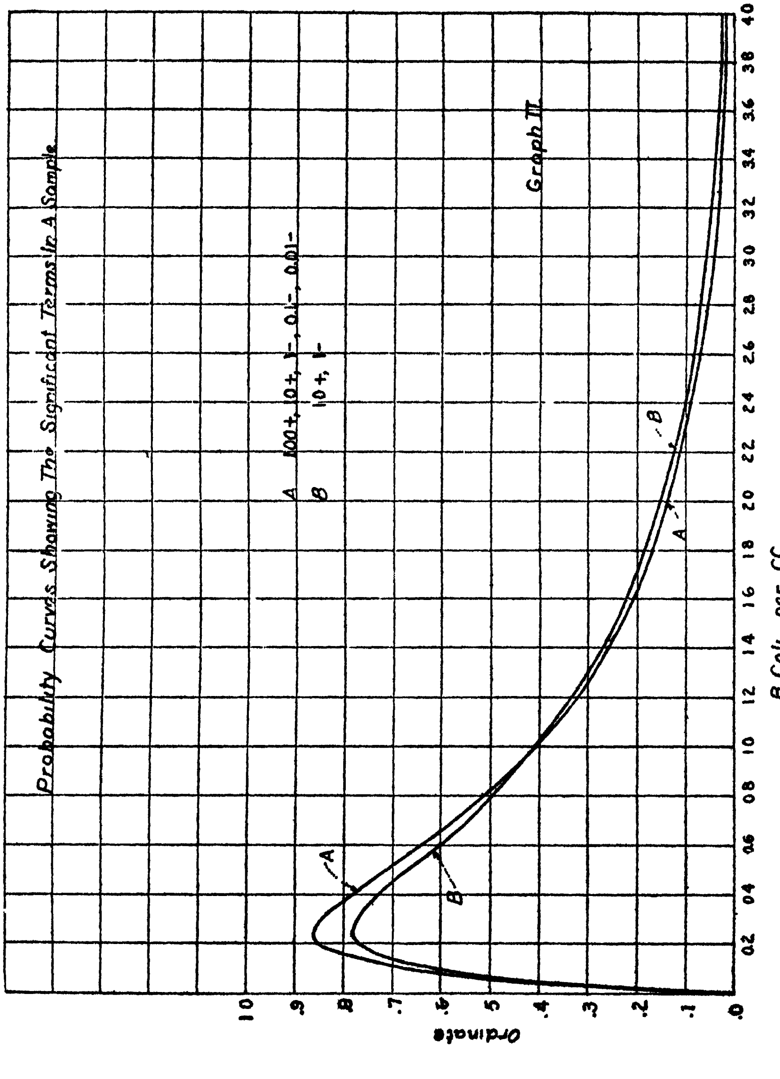
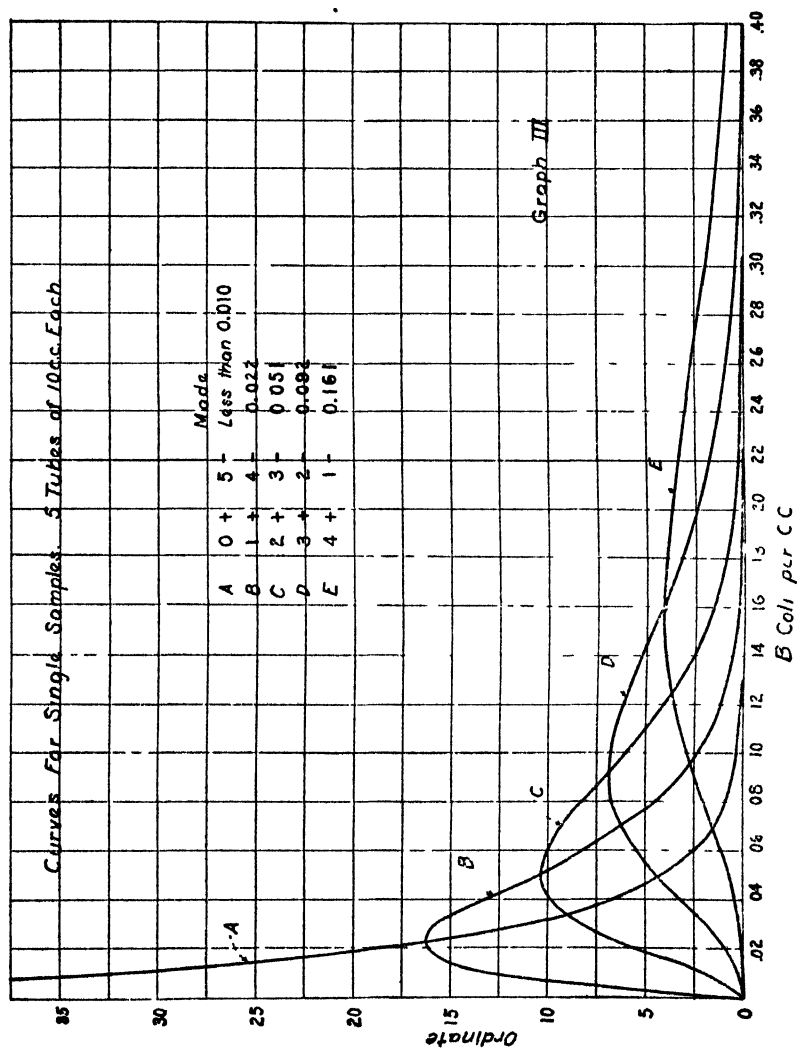
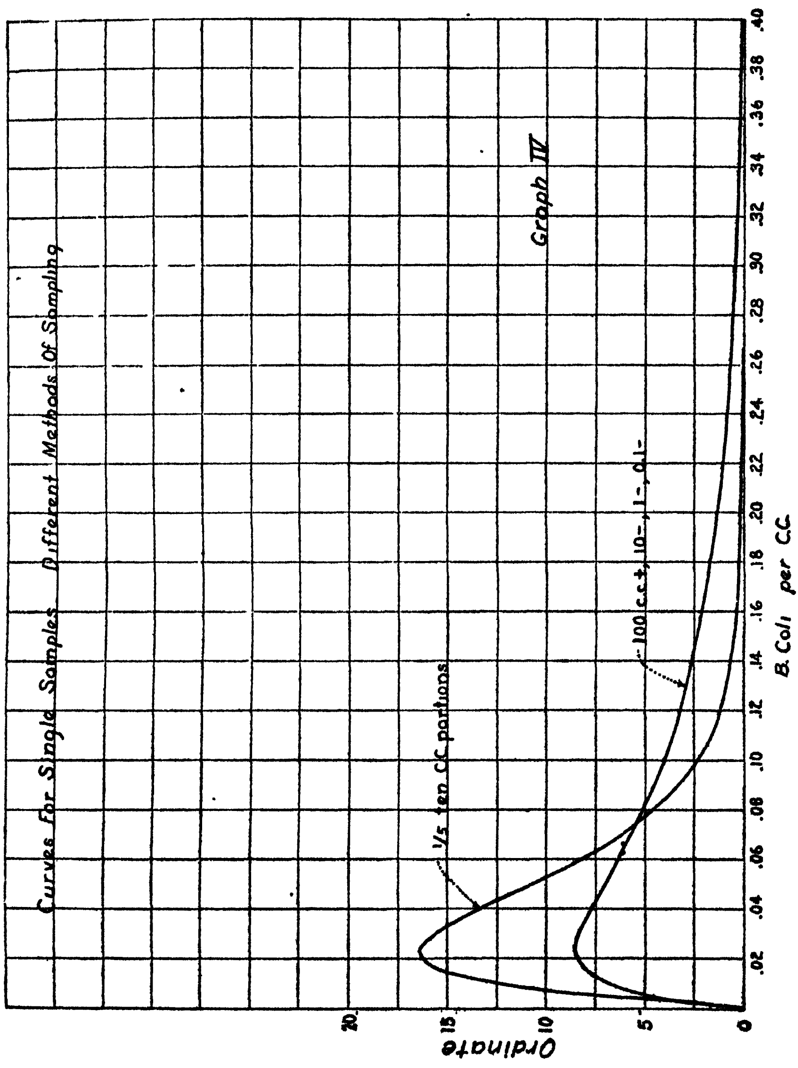
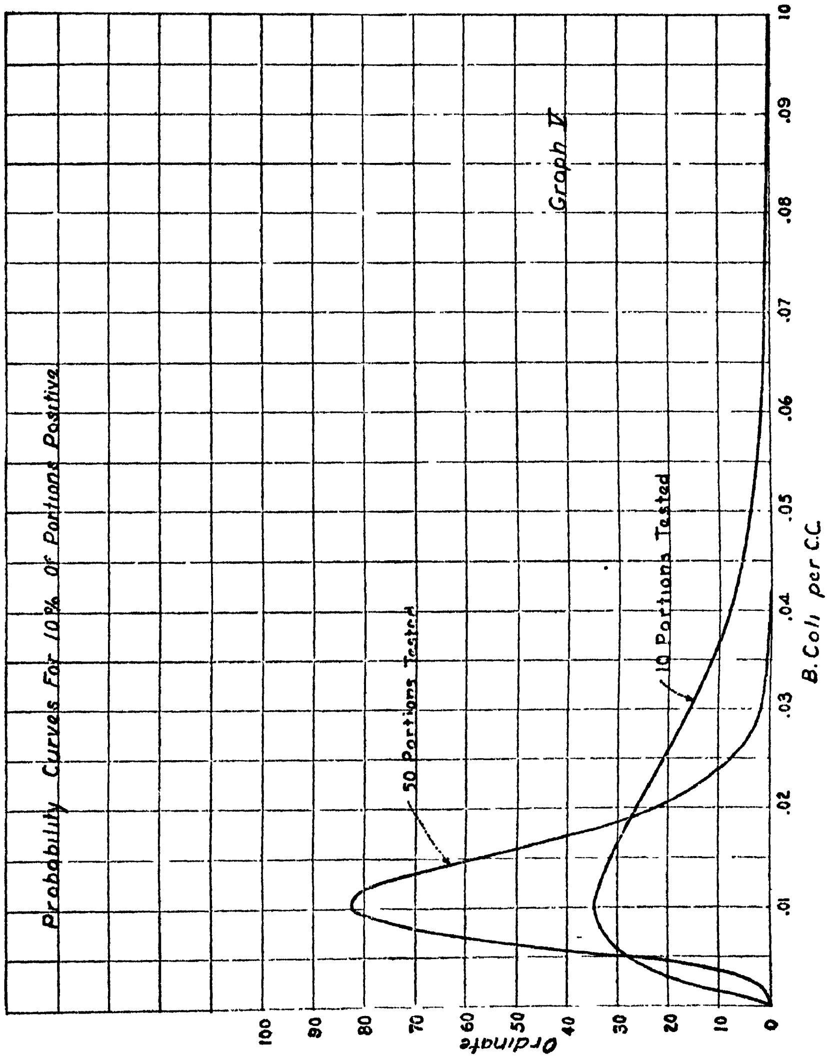
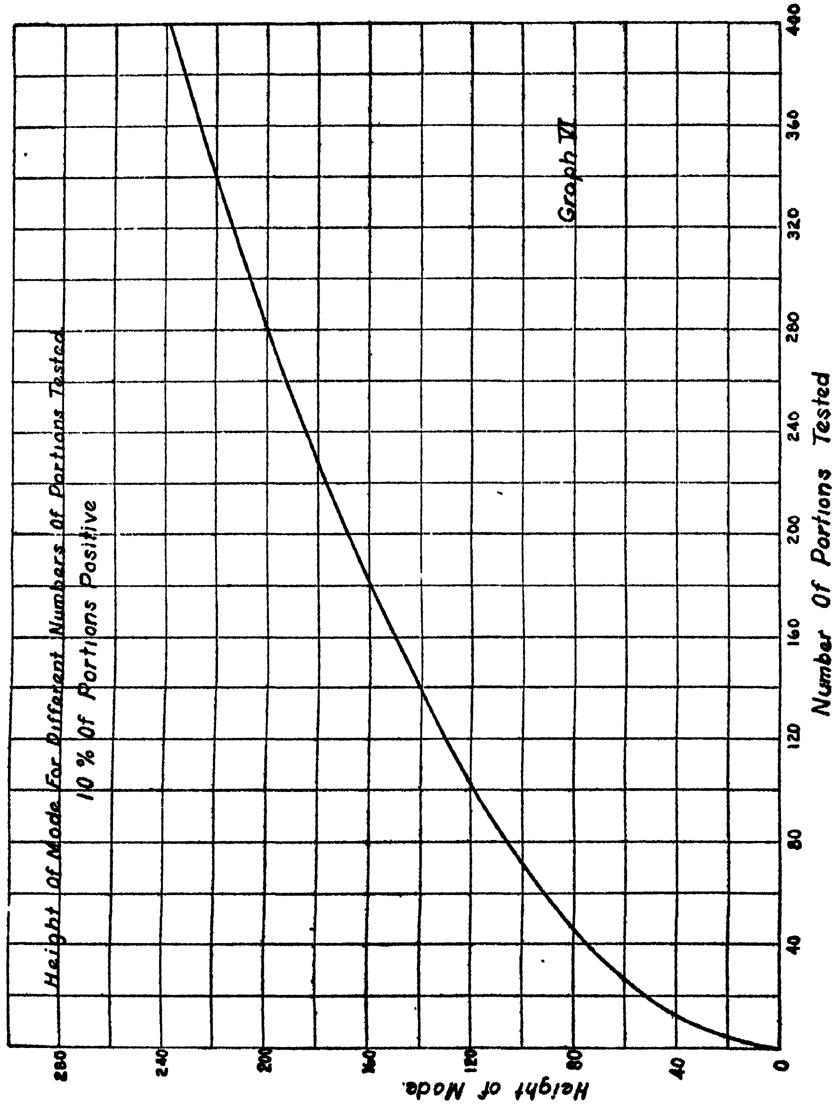

Probability Curves For Samples In Geometric Series
Graph I
Ordinate
B. Coli per CC.
Mode at 8.5
Number of C.C.'s
100 10 10 0.1 0.01
Modes —o
A
B
C
D
E


Probability Curves Showing The Significant Terms In A Sample
A 100+, 10+, 1-, 0.1-, 0.01-
B 10+, 1-
Graph II
B Coli per CC.
Ordinate


Curves For Single Samples 5 Tubes of 10 c.c. Each
Moda
A 0 + 5 - Less than 0.010
B 1 + 4 - 0.022
C 2 + 3 - 0.051
D 3 + 2 - 0.092
E 4 + 1 - 0.161
Graph III
B Coli per CC
Ordinate


Curves For Single Samples Different Methods Of Sampling
Graph IV
1/5 ten CC portions
100 c.c.+, 10-, 1-, 0.1-
B. Coli per CC
Ordinate
0
5
10
15
20
.02
.04
.06
.08
.10
.12
.14
.16
.18
.20
.22
.24
.26
.28
.30
.32
.34
.36
.38
.40


Probability Curves For 10% Of Portions Positive
Graph V
50 Portions Tested
10 Portions Tested
B. Coli per C.C.
Ordinate
0 10 20 30 40 50 60 70 80 90 100
.01 .02 .03 .04 .05 .06 .07 .08 .09 .10


Height Of Mode For Different Numbers Of Portions Tested
10 % Of Portions Positive
Graph VI
Number Of Portions Tested
Height of Mode.
0
40
80
120
160
200
240
280
320
360
400

Appendix IV

THE PHYSICAL AND CHEMICAL CHARACTERISTICS OF ACCEPTABLE WATER SUPPLIES

DEFINITION OF A SATISFACTORY WATER

With respect to chemical and physical characteristics a water, to be suitable for drinking and culinary purposes on common carriers engaged in interstate traffic, should be clear, colorless, odorless, pleasant to the taste, should be free from toxic salts, and should not contain an excessive amount of soluble mineral substances, nor of any chemicals employed in treatment.

QUANTITATIVE DESCRIPTION

In the quantitative description of acceptable supplies which follows, the values given are intended to represent the maximum which is considered to be ordinarily allowable in the water supplies to which this report refers. It is realized that in many localities supplies of water are available which do not approach the limits allowed here; and in such cases the best available supply should be used.

All values given in the following descriptions are in terms of parts per million, by weight, excepting values for turbidity and color, which are expressed in the arbitrary scales which are in general use. A statement of the methods of analysis recommended for the determination is given in each instance.[6]

PHYSICAL CHARACTERISTICS

1. *Turbidity* should not exceed 10 (silica scale) and in general it should not be more than 5.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 4.[6]

2. *Color* should not exceed 20 (standard cobalt scale) and preferably should be less than 10.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 8.[6]

3. There should be *no odor* of hydrogen sulphide, chlorine, or other substance; and the water should be free from odors caused by the presence of microscopic organisms.

CHEMICAL SUBSTANCES WHICH MAY BE PRESENT IN NATURAL WATERS

1. *Lead* (*Pb*) shall not exceed 0.1 p. p. m., and *Copper* (*Cu*) shall not exceed 0.2 p. p. m.

[6] For the chemical determinations referred to in this report, the methods of analysis recommended by the Association of Official Agricultural Chemists are satisfactory and may be substituted for those recommended by the American Public Health Association, which are specifically cited.

Preliminary test (Hanford and Bartow's Method):

To 100 c. c. of the water add 2.0 gms. of pure crystalline ammonium chloride, 2 c. c. of acetic acid, and 2 or 3 drops of a 10 per cent solution of sodium sulphide. One or two c. c. of hydrogen sulphide water may be substituted for the sodium sulphide solution if desired. Compare immediately in nessler jars with standards prepared by adding known amounts lead nitrate to distilled water diluting to 100 c. c. and treating as directed for the sample. Standards should contain 0.01, 0.02, 0.03 mg. of lead (Pb). The method is sufficiently accurate when less than 0.3 p. p. m. lead or copper are represented.

If it is desirable to determine the amount of the metals with greater accuracy, the following methods are recommended:

Lead (Pb): Standard Methods of Water Analysis, American Public Health Association, 1923, p. 53.[7]

Copper (Cu): Standard Methods of Water Analysis, American Public Health Association, 1923, p. 55.[7]

2. *Zinc* (*Zn*) shall not exceed 5.0 p. p. m.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 54.[7]

3. *Sulphate* (SO_4) should not exceed 250 p. p. m.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 65.[7]

4. *Magnesium* (*Mg*) should not exceed 100 p. p. m.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 65.[7]

5. *Total Solids* should not exceed 1,000 p. p. m.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 25.[7]

6. *Chlorides* (*Cl*) should not exceed 250 p. p. m.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 42.[7]

7. *Iron* (*Fe*) should not exceed 0.3 p. p. m.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 46.[7]

CHEMICAL SUBSTANCES WHICH MAY BE PRESENT IN OVERTREATED WATERS

1. The water should contain *no caustic alkalinity.*

Methods: Based on determination of alkalinity, Standard Methods of Water Analysis, American Public Health Association, 1923, p. 34.[7]

2. The water should have *no odor or taste of free chlorine.*

3. The water should contain a residual alkalinity of at least 10 p. p. m. if it has been treated with sulphate of aluminium or other aluminium compound.

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[7] See footnote p. 717.

Methods: Standard Methods of Water Analysis, American Public Health Association, 1923, p. 32.[7]

4. *The carbonates of sodium and potassium*, taken together and calculated as normal calcium carbonate, should not exceed 50 p. p. m.

Methods: Based on determination of alkalinity, Standard Methods of Water Analysis, American Public Health Association, 1923, p. 34.[7]

DISCUSSION

It is obvious that a water which is turbid, or colored to a degree which is easily noticeable, or which has an unpleasant or unusual odor or taste, will be looked upon with suspicion by the passengers and employees to whom it is served for drinking purposes, and that for this reason its use should not be permitted where clarification is practicable or where a more acceptable supply is available.

The presence of considerable amounts of calcium and magnesium salts makes the water unpleasant to use for washing, and also for drinking, to persons who have been accustomed to softer water, although, on the other hand, persons who are accustomed to the harder waters may find the softer waters less agreeable to their taste. While it is open to question whether it would be justifiable to require the dilution of hard water by distilled water in order to keep within the limits specified herein, it would be proper to require carriers to select the local supplies which most nearly fulfill the requirements of the standards with respect to mineral content.

In so far as the chemical composition of the water may cause inconvenience by its irritating effect upon the intestinal canal, or by any more serious effect upon well-being, the certifying authority will be justified in demanding that due regard be paid to the matter by common carriers. Unfortunately, it is difficult to secure reliable information concerning the physiological activity of salts as found in waters. Idiosyncracy is important. It is universally admitted, of course, that poisonous metals such as lead and copper should not be allowed in water for drinking or culinary purposes, but the difficult points are concerned with the less poisonous substances, or salts which are normally present. The effect of sulphates, especially of magnesium sulphate, is, however, well recognized, and it would be desirable to avoid the use of waters in which the concentration of these salts is sufficiently high to be annoying.

Where waters are treated with chemicals in order to soften them, or to purify them in any way, it is desirable that any excess of the chemicals used shall be avoided. Caustic alkalinity from excess of lime, more than a trace of the aluminium compounds added, or free chlorine, are objectionable in the effluent from a purification plant.

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[7] See footnote p. 717.

In general, it is considered proper to insist that the effort should be made to find waters which are as satisfactory as possible from the standpoint of chemical characteristics but with due regard to the region within which the supply must be obtained.

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DIVISION OF VENEREAL DISEASES, JULY 1-DECEMBER 31, 1924

The accompanying tables present a summary of the activities of the venereal disease clinics and the number of cases of venereal diseases reported to State boards of health during the six months ended December 31, 1924.

A semiannual summary of the activities of 502 venereal disease clinics during the latter half of 1924 is presented in Table 1. During this period 32,592 cases of syphilis were admitted to the clinics, that disease constituting slightly more than half the total number of cases. The ratios were as follows: Syphilis, 54 per cent; gonococcus infection, 43.2 per cent; chancroid, 2.8 per cent. During the half year 1,202,609 treatments were given, including 278,398 doses of arsphenamine. The clinics discharged as noninfectious 26,916 patients.

Table 2 shows that a total of 183,726 cases of syphilis, gonorrhea, and chancroid were reported to State boards of health during the last six months of 1924. The proportions of these diseases reported are: Syphilis, 52.8 per cent; gonorrhea, 45.2 per cent; chancroid, 2.0 per cent.

Table 1.—*Summary of reports of venereal disease clinics, including those operating under the joint control of the United States Public Health Service and State boards of health, for the six months, July 1–December 31, 1924*[1]

State	Total number of clinics reporting	Total number of reports received	Patients admitted: Total	Patients admitted: Syphilis	Patients admitted: Gonorrhea	Patients admitted: Chancroid	Patients discharged as noninfectious	Treatments given	Doses of arsphenamin given	Wassermann tests made	Microscopic examinations (gonococcus)
United States	502	2,803	60,401	32,592	26,120	1,689	26,916	1,202,609	278,398	166,888	109,612
Alabama	14	81	3,903	2,643	1,151	109	2,323	57,106	22,029	6,727	1,261
Arizona[2]	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Arkansas	10	55	1,716	1,189	505	22	1,241	31,374	6,954	4,294	1,428
California	11	66	3,597	1,945	1,612	40	555	54,775	19,292	10,420	3,271
Colorado	9	54	587	292	283	12	366	9,698	2,048	815	721
Connecticut	6	36	464	200	251	13	240	7,781	1,866	827	819
Delaware	2	12	159	86	63	10	70	1,447	552	107	54
Florida	10	55	862	517	286	59	451	6,837	2,431	1,306	451
Georgia	6	36	1,419	1,119	239	61	183	18,368	7,195	4,524	537
Idaho[2]	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Illinois	27	160	6,060	2,508	3,388	164	2,267	208,260	20,776	22,891	21,313
Indiana	19	111	2,235	886	1,273	76	563	65,684	9,880	4,149	1,703
Iowa[3]	10	44	619	381	238	-----	195	11,810	4,761	1,440	1,034
Kansas	9	43	492	300	191	1	381	19,253	2,797	1,474	905
Kentucky	17	91	2,838	1,262	1,517	59	1,273	28,890	8,093	3,141	1,917
Louisiana	6	27	1,971	1,198	708	65	1,201	15,899	7,050	2,154	981
Maine	4	21	129	84	40	5	94	2,034	1,007	354	220
Maryland	15	81	1,358	550	695	113	123	25,094	6,683	1,871	2,194
Massachusetts	40	255	3,231	1,686	1,544	1	1,000	96,694	25,079	14,624	11,293
Michigan	17	98	3,750	1,931	1,803	16	721	68,439	13,627	14,624	13,180
Minnesota	4	24	420	172	247	1	244	13,051	3,190	1,193	612
Mississippi	2	12	156	103	43	10	61	1,377	822	81	155
Missouri	15	73	1,089	696	386	7	453	18,817	4,109	2,608	816
Montana	2	11	27	7	17	3	23	144	35	15	49
Nebraska	6	34	637	302	304	31	257	18,228	3,822	1,933	2,667
New Hampshire	4	23	61	22	42	-----	10	3,569	962	213	137
New Jersey	19	109	1,077	638	432	7	287	25,087	6,118	2,726	1,611
New Mexico[4]	2	8	27	20	7	-----	19	474	260	82	44
New York	43	250	2,430	1,511	887	32	2,385	62,427	17,608	5,126	2,715
North Carolina	6	32	1,095	666	369	60	417	6,710	4,221	1,533	189
North Dakota	2	12	24	9	15	-----	21	244	30	38	88
Ohio	45	259	4,877	2,528	2,248	101	2,822	96,433	18,196	15,283	9,386
Oklahoma	3	15	443	273	160	10	244	11,171	2,453	620	453
Oregon	1	6	237	144	93	-----	15	3,265	881	499	426
Pennsylvania	46	258	2,482	1,279	1,144	59	2,019	67,015	13,511	5,707	2,423
Rhode Island	5	30	345	160	184	1	125	6,543	2,707	2,735	1,328
South Carolina	3	18	1,256	647	557	52	738	20,727	4,831	1,185	3,106
South Dakota	2	12	34	9	23	2	12	413	78	61	63
Tennessee	5	27	2,612	1,527	838	247	1,222	41,191	9,680	10,513	3,888
Texas	4	20	1,826	915	752	159	922	27,793	6,312	3,575	6,430
Utah	2	11	196	86	102	8	95	2,593	621	360	323
Vermont	4	24	30	20	10	-----	10	696	471	132	63
Virginia	9	51	1,450	934	466	50	485	13,438	6,581	5,526	1,720
Washington	3	18	697	304	388	5	373	13,475	2,236	3,016	2,662
West Virginia	13	53	715	463	239	13	229	11,199	3,467	1,163	909
Wisconsin	13	78	673	337	334	2	153	6,504	2,790	4,808	2,701
Wyoming	1	6	92	43	46	3	22	522	196	415	1,166

[1] Includes correctional and penal institutions.
[2] No clinics.
[3] For five months.
[4] For four months.

TABLE 2.—*Cases of venereal diseases reported to State boards of health, July 1, 1924, to December 31, 1924*

State	Total	Syphilis	Gonorrhea	Chancroid
United States	183,726	97,007	83,097	3,622
Alabama	6,023	3,512	2,338	173
Arizona	179	101	75	3
Arkansas	2,272	1,415	825	32
California	9,393	5,146	4,134	113
Colorado	1,236	442	761	33
Connecticut	1,216	622	593	1
Delaware	298	86	177	35
Florida	3,800	2,492	1,204	104
Georgia	4,940	2,657	2,069	214
Idaho	133	39	93	1
Illinois	15,862	5,136	10,403	323
Indiana	2,288	937	1,277	74
Iowa	1,737	1,019	712	6
Kansas	1,003	353	647	3
Kentucky	21,640	14,898	6,563	179
Louisiana	3,890	2,002	1,644	244
Maine	611	223	383	5
Maryland	2,939	1,356	1,386	197
Massachusetts	7,144	2,818	4,325	1
Michigan	12,365	6,693	5,595	77
Minnesota	5,050	2,336	2,679	35
Mississippi	12,763	5,216	7,537	10
Missouri	4,091	1,543	2,038	510
Montana	310	195	113	2
Nebraska	1,782	560	1,167	55
New Hampshire	240	90	149	1
New Jersey	3,186	1,767	1,381	38
New Mexico [1]	131	30	100	1
New York	18,854	13,396	5,423	35
North Carolina	3,055	1,573	1,392	90
North Dakota	563	100	463	
Ohio	4,877	2,528	2,248	101
Oklahoma	1,926	1,223	691	12
Oregon	920	228	688	4
Pennsylvania	2,483	1,280	1,144	59
Rhode Island	561	229	331	1
South Carolina	2,302	1,459	779	64
South Dakota	403	55	340	8
Tennessee	3,576	1,989	1,318	269
Texas	8,361	4,603	3,442	316
Utah	196	86	102	8
Vermont	316	126	190	
Virginia	1,710	1,023	635	52
Washington	914	402	502	10
West Virginia	4,259	2,649	1,539	71
Wisconsin	1,854	334	1,471	49
Wyoming	74	40	31	3

[1] For three months.

PUBLIC HEALTH SERVICE PUBLICATIONS

A List of Publications Issued During the Period April, 1924, to March, 1925

Below is given a list of publications of the United States Public Health Service issued during the period April, 1924, to March, 1925.

The most important articles that appear each week in the PUBLIC HEALTH REPORTS are reprinted in pamphlet form, making possible a wider and more economical distribution of articles that are of interest to the general public.

All of the publications listed, except those marked with an asterisk (*), are available for free distribution and, as long as the supply lasts, may be obtained by addressing the Surgeon General, United States Public Health Service, Washington, D. C. Those publications

marked with an asterisk are not available for free distribution, but may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., ***at the prices noted.*** **(Send no remittances to the Public Health Service.)**

Reprints from the Public Health Reports

911. Outbreaks of Botulism at Albany, Orégon, and Sterling, Colo., February, 1924. By Frederick D. Stricker and J. C. Geiger. April 4, 1924. 11 pages.

*912. Some Tendencies Indicated by the New Life Tables. By Rollo H. Britten. April 11, 1924. 13 pages, 5 cents.

913. A Method for the Estimation of Total Sulphur in Neoarsphenamine and Sulpharsphenamine. By Elias Elvove. April 11, 1924. 5 pages.

914. Sickness Among 21,000 Automobile Workers. Morbidity Experience of the Flint and Pontiac (Michigan) Sick Benefit Associations in 1921 and 1922. By Dean K. Brundage. April 18, 1924. 13 pages.

*915. Studies on Oxidation-Reduction. VI. A preliminary Study of Indophenols: (A) Dibromo Substitution Products of Phenol Indophenol; (B) Substituted Indophenols of the Ortho Type; (C) Miscellaneous. By Barnett Cohen, H. D. Gibbs, and W. Mansfield Clark. April 18, 1924. 20 pages. 5 cents.

916. Spontaneous Hatching of Clonorchis Ova. By N. E. Wayson. April 25, 1924. 2 pages.

*917. Factors in the Mental Health of Boys of Foreign Parentage. A Study of 240 Boys of Foreign Parentage Known to a Child Welfare Agency 1916–1923. By Mary C. Jarrett. April 25, 1924. 21 pages. 5 cents.

918. Relative Efficiency of Methods of Sterilization of Milk Bottles at Pasteurization Plants in Minnesota. By H. A. Whitaker, R. W. Archibald, and L. Shere. May 2, 1924. 8 pages.

919. The Notifiable Diseases. Prevalence in Small Cities, 1922. May 2, 1924. 93 pages.

920. Epidemiological Principles Affecting the Distribution of Malaria in Southern United States. By Kenneth F. Maxcy. May 16, 1924. 16 pages.

921. Extent of Rural Health Service in the United States, 1920–1924. By L. L. Lumsden. May 16, 1924. 10 pages.

922. Whole-Time County Health Officers, 1924. May 16, 1924. 4 pages.

923. Public Health Service Publications. A List of Publications Issued Between October, 1923, and April, 1924. April 25, 1924. 4 pages.

924. The Prevalence and Trend of Drug Addiction in the United States and Factors Influencing It. By Lawrence Kolb and A. G. DuMez. May 23, 1924. 26 pages.

925. Some Experiments on the Antigenic Principles of Ragweed Pollen Extract (*Ambrosia elatior* and *Ambrosia trifida*). By W. T. Harrison and Charles Armstrong. May 30, 1924. 6 pages.

926. Health by Radio. Vitamins. May 30, 1924. 5 pages.

927. Some Publications Suitable For General Distribution. May 30, 1924. 10 pages.

928. Absenteeism Because of Sickness in Certain Schools in Cleveland, 1922–23. By G. E. Harmon and G. E. Whitman. June 6, 1924. 8 pages.

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929. Disabling Sickness in Cotton Mill Communities of South Carolina in 1917. A Study of Sickness Prevalence and Absenteeism, as Recorded in Repeated Canvasses in Relation to Seasonal Variation, Duration, Sex, Age, and Family Income. By Dorothy Wiehl and Edgar Sydenstricker. June 13, 1924. 27 pages.
930. City Health Officers, 1924. Directory of Those in Cities of 10,000 or More Population. June 13, 1924. 11 pages.
931. The Prevention and Treatment of Hay Fever. By William Scheppegrell. June 20, 1924. 12 pages.
932. Adsorption by Aluminium Hydrate Considered as a Solid Solution Phenomenon. By Lewis B. Miller. June 20, 1924. 14 pages.
933. Past Incidence of Certain Communicable Diseases Common Among Children. Occurrence of Measles, Whooping Cough, Mumps, Chicken Pox, Scarlet Fever, and Diphtheria, Among School Children in Various Localities in the United States. By Selwyn D. Collins. June 27, 1924. 16 pages.
934. The Alabama System of Notifiable Disease Reports. By Kenneth F. Maxcy. July 4, 1924. 10 pages.
935. Safeguarding the Sanitary Quality of Drinking and Culinary Water Supplied on Interstate Carriers. By E. C. Sullivan. July 4, 1924. 16 pages.
936. Effect of Oil Pollution of Coast and Other Waters on the Public Health. By Committee Consisting of F. W. Lane, A. D. Bauer, H. F. Fisher, and P. N. Harding. July 11, 1924. 6 pages.
937. The Notifiable Diseases. Prevalence During 1923 in Cities of Over 100,000. July 11, 1924. 32 pages.
938. A Study of the Incidence of Disabling Sickness in a South Carolina Cotton Mill Village in 1918. Based on Records of a Continuous Canvass of Households During the Period March 1 to November 30, 1918. By Edgar Sydenstricker and Dorothy Wiehl. July 18, 1924. 16 pages.
939. The legal Aspects of Milk Control. By James A. Tobey. July 18, 1924. 8 pages.
940. Cancer and Proprietary Cures. July 18, 1924. 8 pages.
941. Thyroid Survey of 47,493 Elementary-School Children in Cincinnati. By Robert Olesen. July 25, 1924. 26 pages.
942. A Note on the Relationship of Tonsillectomy to the Occurrence of Scarlet Fever and Diphtheria. By James A. Doull. August 1, 1924. 8 pages.
943. The Biological Standardization of Insulin. II. The Mortality and Glucose-Protective Test in Rats as a Method for the Bio-Assay of Insulin. By Carl Voegtlin, Edith R. Dunn, and J. W. Thompson. August 8, 1924. 24 pages.
944. The Present Status of the Parasitic Nematode Family Ascaridæ. By C. W. Stiles and Gertrude Brown. August 8, 1924. 6 pages.
945. Sanitary Engineering Courses of Engineering Colleges in the United States. By Isador W. Mendelsohn. August 15, 1924. 8 pages.
946. The Notifiable Diseases. Prevalence in Small Cities, 1923. August 15, 1924. 107 pages.
947. The Income Cycle in the Life of the Wage Earner. By Edgar Sydenstricker, Wilford I. King, and Dorothy Wiehl. August 22, 1924. 8 pages.
948. Correspondence and Reading Courses in Public Health. August 22, 1924. 8 pages.
949. State and Insular Health Authorities, 1924. Directory, with Data as to Appropriations and Publications. August 22, 1924. 23 pages.
950. Pellagra in Relation to Milk Supply in the Household. By G. A. Wheeler. August 29, 1924. 4 pages.

951. A Plea for More Attention to the Nutrition of the School Child. By Taliaferro Clark. August 29, 1924. 9 pages.
952. Protection of Small Water Supplies Used by Railroads. By O. E. Brownell. September 5, 1924. 10 pages.
953. The Kata Thermometer: Its Value and Defects. By W. J. McConnell and C. P. Yagloglou. September 5, 1924. 16 pages.
954. Causes of Absences in One Grade of Fifteen Public Schools in Washington, D. C. By Louise Tayler-Jones. September 12, 1924. 10 pages.
955. Thyroid Enlargement Among Montana School Children. With Notes on the Possible Influence of the Place of Residence and the Use of Vegetables and Drinking Water Upon the Condition. By Fred T. Foard. September 12, 1924. 5 pages.
956. Per Capita Medicinal Requirements of Narcotics. Data Secured in a Narcotic Survey of Allgheny County, Md. By A. G. DuMez. September 12, 1924. 4 pages.
957. Morbidity Among School Children in Hagerstown, Md. Cases of Illness and Days Lost From School on Account of Illness Among White School Children During the School Months December, 1921, to May, 1923, inclusive. By Selwyn D. Collins. September 19, 1924. 32 pages.
958. A Study of Ragweed Pollen Extracts for Use in the Treatment of Ragweed Pollen Hypersensitiveness. By Charles Armstrong and W. T. Harrison. September 19, 1924. 8 pages.
959. Public Health Administration in Foreign Countries. Organization of the Public Health Service in Hungary. By George Gortvay, M. D. Public Health Administration in Poland. By Karl Ryder, M. D. September 26, 1924. 8 pages.
960. Child Hygiene and Related Publications Issued by the Public Health Service. September 26, 1924. 4 pages.
961. Developments in the Field of Mental Testing. By Helen H. Dolan. October 3, 1924. 18 pages.
962. Mortality from malaria 1919–1923. By Kenneth F. Maxcy. October 10, 1924. 4 pages.
963. Thyroid Enlargement Among Minnesota School Children. Prevalence as Shown by a Survey of 4,061 Childern in 13 Localities in 1923. By Robert Olesen and Taliaferro Clark. October 10, 1924. 11 pages.
*964. Cooperative Rural Work of the Public Health Service in the Fiscal Year 1924. By L. L. Lumsden. October 17, 1924. 25 pages. 5 cents.
965. Outbreak of Scarlet Fever Caused by Milk-Borne Infection. By Arthur Jordan. October 17, 1924. 7 pages.
966. Epidemiological Study of the Minor Respiratory Diseases by the Public Health Service. (Preliminary and Progress Report.) By J. G. Townsend. October 24, 1924. 12 pages.
967. Apparent Arrest of Leprosy by Early Surgical Treatment. Report of Reexamination of a Child in Whom Leprosy Developed at Ninteen Months of Age. By William J. Goodhue and H. E. Hasseltine. October 24, 1924. 4 pages.
968. A Comparative Study of the Schulte-Tigges and the Ziehl-Neelsen Methods of Staining *B. leprae*. By H. E. Hasseltine and P. J. Gorman. October 24, 1924. 3 pages.
969. Frequency of Disabling Illnesses Among Industrial Employees. Incidence of Illnesses from Important Causes Lasting Longer Than One Week Among 100,000 Persons in 1923, and a Summary of the Experience for 1920–1923. October 31, 1924. 10 pages.

970. Importation of Dead Bodies at the Port of New York. Requirements of the Various Governmental Agencies Concerned Regarding Importation and Transportation. October 31, 1924. 2 pages.
971. A Statewide Milk Sanitation Program. By Leslie C. Frank. November 7, 1924. 23 pages.
972. Some Specific Factors Responsible for Pollution or Affecting Analyses of Water Supplies. November 7, 1924. 4 pages.
973. Study of the Effect of Degree of Illumination on Working Speed of Letter Separators in a Post Office. By James E. Ives. November 14, 1924. 27 pages.
974. The Notifiable Diseases. Prevalence During 1923 in States. November 21, 1924. 96 pages.
975. The Eyesight of the School Child as Determined by the Snellen Test. A Statistical Study of the Results of Vision Tests of 9,245 Native White Children in New York State, Delaware, South Carolina, and Frederick County, Md., and of 2,636 White Children in Cecil County, Md. By Selwyn D. Collins. November 28, 1924. 15 pages.
976. Rocky Mountain Spotted Fever: Experimental Studies on Tick Virus. By R. R. Spencer and R. R. Parker. November 28, 1924. 13 pages.
977. Basal Metabolism Before and After Exposure to High Temperatures and Various Humidities. By W. J. McConnell and C. P. Yagloglou. December 5, 1924. 14 pages.
978. A Survey of Public Health Nursing in the State Departments of Health. Compiled by Lucy Minnigerode. December 12, 1924. 27 pages.
979. Variation in Eyesight at Different Ages, as Determined by the Snellen Test. A Statistical Study of the Results of Vision Tests of 4,862 Native White School Boys and 6,479 Male White Industrial Workers in the United States. By Selwyn D. Collins and Rollo H. Britten. December 19,1924. 6 pages.
980. Oil Pollution at Bathing Beaches. Prepared by a Committee Consisting of F. W. Lane, A. D. Bauer, H. F. Fisher, and P. N. Harding. December 19, 1924. 14 pages.
981. Cooperative Relations Between Official and Unofficial Health Agencies. By S. W. Welch. December 26, 1924. 9 pages.
982. Rocky Mountain Spotted Fever: Non-Filterability of Tick and Blood Virus. By R. R. Spencer and R. R. Parker. December 26, 1924. 5 pages.
983. Epidemic Goiter in Colorado. By Robert Olesen. January 2, 1925. 22 pages.
984. A Study of the Pellagra-Preventive Action of Dried Beans, Casein, Dried Milk, and Brewer's Yeast, with a Consideration of the Essential Preventive Factors Involved. By Joseph Goldberger and W. F. Tanner. January 9, 1925. 27 pages.
985. The Significance of the Proportion of Sexes Found Among Anopheles in Various Resting Places. By M. A. Barber, W. H. W. Komp and T. B. Hayne. January 16, 1925. 6 pages.
986. Studies on the Permeability of Living and Dead Cells. V. The Effects of $NaHCO_3$ and NH_4Cl Upon the Penetration into Valonia of Trivalent and Pentavalent Arsenic at Various H Ion Concentrations. By Matilda Moldenhauer Brooks. January 23, 1925. 23 pages.
987. Some Preliminary Observations from a Study of Water Filtration Plants Along the Ohio River. By H. W. Streeter. January 30, 1925. 11 pages.
988. Mild Typhus (Brill's Disease) in the Lower Rio Grande Valley. By Charles G. Sinclair and Kenneth F. Maxcy. February 6, 1925. 8 pages.

989. The Incidence of Illness in a General Population Group. General Results of a Morbidity Study from December 1, 1921, through March 31, 1924, in Hagerstown, Md. By Edgar Sydenstricker. February 13, 1925. 13 pages.

990. Studies on the Industrial Dust Problem. I. Dust Inhalation and its Relation to Industrial Tuberculosis. By Leonard Greenburg. February 13, 1925. 18 pages.

991. The Vacuum-Cyanide Method of Delousing Clothing and Baggage. Experimental Data upon Which the Procedure at the New York Quarantine Station is Based. By H. E. Trimble. February 20, 1925. 21 pages.

992. A Study of the Effects of Anions upon the Properties of "Alum Floc." By Lewis B. Miller. February 20, 1925. 17 pages.

993. Incidence of Sickness Among White School Children in Hagerstown, Md. Frequency of Illnesses During the School Year 1923–24 and a Summary of the Experience for 1921–1924. By Selwyn D. Collins. February 27, 1925. 14 pages.

994. The Pan American Sanitary Code. International Sanitary Convention signed at Habana, Cuba, November 14, 1924. March 13, 1925. 26 pages.

995. Drainage Ditches Covered Economically. Concrete Pipe Manufactured and Laid Cheaply in Emporia, Va. March 13, 1925. 8 pages.

996. Eight Weeks' Quinine Treatment for Malaria. A report of results as observed in a community with a high malaria incidence, in Dale County Ala. By T. H. D. Griffitts. March 20, 1925. 10 pages.

997. Absence of Transferable Immunizing Substances in the Blood of Morphine and Heroin Addicts. By A. G. Du Mez and Lawrence Kolb. March 20, 1925. 12 pages.

998. Results Obtained with the Dick Test Before and After Immunization with the Toxin of the Hemolytic Streptococcus of Scarlet Fever. By R. E. Dyer and B. T. Sockrider. March 27, 1925. 14 pages.

999. Foot Defectiveness in School Children. March 27, 1925. 4 pages.

Supplements to the Public Health Reports

45. State Laws and Regulations Pertaining to Public Health, 1921. Compiled by Jason Waterman, LL. B., and William Fowler, LL. B. 1924. 746 pages.

46. Standard Railway Sanitary Code. Approved by the conference of State and Provincial officers of health, and recommended to the several States for adoption May 25, 1920, and amended June 2, 1921. May 16, 1924. 13 pages.

47. State Laws and Regulations Pertaining to Public Health, 1922. Compiled by Jason Waterman, LL. B., and William Fowler, LL. B. 1925. 224 pages.

48. A Review of the Literature on Influenza and the Common Cold. By J. G. Townsend. 1924. 63 pages.

50. A Typhoid Fever Epidemic Caused by Oyster-borne Infection. By L. L. Lumsden, H. E. Hasseltine, J. P. Leake, and M. V. Veldee. 1925. 102 pages.

Public Health Bulletins

140. Studies in Illumination. I. The Hygienic Conditions of Illumination in Certain Post Offices, Especially Relating to Visual Defects and Efficiency. By Lewis R. Thompson, Louis Schwartz, James E. Ives, and Norris P. Bryan. July, 1924. 118 pages.

141. Studies Upon Leprosy. XXXVI. The Treatment of Leprosy with Derivatives of Chaulmoogra Oil. By H. E. Hassletine. XXXVII. (I) Fractionation of Chaulmoogra Oil. (II) Evidence of the Existence of a Highly Unsaturated Optically Active Acid. By Richard Wrenshall and Arthur L. Dean. XXXVIII. The Catalytic Reduction of Chaulmoogra and Hydnocarpic Acids. By Arthur L. Dean, Richard Wrenshall, and G. Fujimoto. XXXIX. The Treatment of Leprosy with Compounds of Antimony. By H. E. Hasseltine and P. J. Gorman. XL. The Formol-Gel Reaction in Leprosy. By H. E. Hasseltine. XLI. The Wassermann Reaction, Kolmer's New Complement Fixation Test, and the Kahn Precipitation Test in Leprosy. By H. E. Hasseltine. XLII. Results of the Removal of Children Born of Leprous Parents to Clean Environment and their Maintenance Therein. By H. E. Hasseltine. Appendix: Proctocol of Serum Tests in Leprosy. July, 1924. 72 pages.

*142. Transactions of the Fourth Annual Conference of State Sanitary Engineers, held at Washington, D. C., May 16 and 17, 1923. April, 1924. 82 pages. 15 cents.

*143. I. A Study of the Pollution and Natura Purification of the Ohio River. II. Report on Surveys and Laboratory Studies. By W. H. Frost, J. K. Hoskins, R. E. Tarbett, and H. W. Streeter. July, 1924. 343 pages. 60 cents.

144. Comparative Tests of Instruments for Determining Atmospheric Dusts. By S. H. Katz, E. W. Smith, W. M. Myers, L. T. Tronstel, Margaret Ingels, and Leonard Greenburg. December, 1924. 69 pages.

145. Biological Investigation of California Rice Fields and Attendant Waters, with Reference to Mosquito Breeding. By W. C. Purdy. December, 1924. 61 pages.

151. The Determination of Dissolved Oxygen by the Winkler Method. By Emery J. Theriault. March, 1925. 43 pages.

Hygienic Laboratory Bulletins

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Annual Report

Annual Report of the Surgeon General of the United States Public Health Service for the fiscal year 1924. 310 pages. Cloth.

Miscellaneous Publications

11. Official List of Commissioned and Other Officers of the United States Public Health Service; also List of United States Marine Hospitals, Quarantine, Immigration, Relief Stations, and Quarantine Vessels. July 1, 1924. 67 pages. Cloth.

Venereal Disease Publications

Venereal Disease Bulletin No. 77. Transactions of the Conference of Venereal Disease Control Officers of the State Health Departments and the United States Public Health Service, 1924.

Venereal Disease Information No. 1. Enforcement of Regulations Relating to Interstate Travel of Venereally Infected Persons.

Venereal Disease Information No. 2. Syphilis in Industry.

Venereal Disease Information No. 3. Workmen's Compensation Acts as Related to Syphilis.

DEATHS DURING WEEK ENDED MARCH 28, 1925

Summary of information received by telegraph from industrial insurance companies for week ended March 28, 1925, and corresponding week of 1924. (From the Weekly Health Index, April 1, 1925, issued by the Bureau of the Census, Department of Commerce.)

	Week ended Mar. 28, 1925	Corresponding week, 1924
Policies in force	59, 188, 650	55, 444, 579
Number of death claims	12, 662	11, 757
Death claims per 1,000 policies in force, annual rate	11. 2	11. 1

Deaths from all causes in certain large cities of the United States during the week ended March 28, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, April 1, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Mar. 28, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Mar. 28, 1925 [2]
	Total deaths	Death rate [1]		Week ended Mar. 28, 1925	Corresponding week, 1924	
Total (64 cities)	7,791	14.8	[3] 14.9	896	[3] 987	
Akron	47			7	10	77
Albany [4]	46	20.0	18.9	2	3	44
Atlanta	69	15.5	20.4	10	11	
Baltimore [4]	236	15.5	18 2	28	28	82
Birmingham	86	21.8	16 4	7	7	
Boston	258	17.2	15.5	34	32	90
Bridgeport	45			5	4	79
Buffalo	159	15.0	13 7	19	33	77
Cambridge	30	13 9	12.1	5	3	86
Camden	37	15.0	17.3	8	4	131
Chicago [4]	780	13.6	13.3	94	99	83
Cincinnati	167	21.3	17.8	14	18	83
Cleveland	216	12.0	13.0	20	31	50
Columbus	119	22 7	17.3	16	5	150
Dallas	64	17 3	15 3	13	12	
Dayton	54	16.3	12.3	3	8	48
Denver	86			9	12	
Des Moines	35	12 2	14.0	3	5	51
Detroit	268			56	70	95
Duluth	25	11.8	13.5	6	3	127
Erie	26			4	4	78
Fall River [4]	43	18.5	11.6	0	8	144
Flint	20			4	5	66
Fort Worth	24	8.2	8.1	2	2	
Grand Rapids	39	13.5	12.7	6	6	93

[1] Annual rate per 1,000 population.

[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.

[3] Data for 63 cities.

[4] Deaths for week ended Friday, Mar. 27, 1925.

Deaths from all causes in certain large cities of the United States during the week ended March 28, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, April 1, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Mar. 28, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Mar. 28, 1925
	Total deaths	Death rate		Week ended Mar. 28, 1925	Corresponding week, 1924	
Houston	43			7	6	
Indianapolis	120	17.4	16.0	15	18	103
Jacksonville, Fla	39	19.4	20.9	5	3	111
Jersey City	92	15.2	14.2	15	15	105
Kansas City, Kans	52	21.9	15.8	9	3	190
Kansas City, Mo	130	18.4	15.1	16	22	
Los Angeles	243			27	28	75
Louisville	104	20.9	16.1	9	10	79
Lowell	31	13.9	14.0	4	6	70
Lynn	18	9.0	11.1	2	1	53
Memphis	60	17.9	21.2	9	10	
Milwaukee	106	11.0	10.1	18	11	82
Minneapolis	113	13.8	12.0	12	12	64
Nashville [4]	41	17.2	18.2	5	4	
New Bedford	29	11.2	13.0	6	6	100
New Haven	49	14.3	15.1	4	11	52
New Orleans	151	19.0	24.3	11	24	
New York	1,565	13.4	14.7	177	231	71
Bronx Borough	166	9.6	12.4	14	19	48
Brooklyn Borough	550	12.8	13.8	70	81	73
Manhattan Borough	670	15.5	17.1	75	115	75
Queens Borough	128	11.6	11.5	14	12	69
Richmond Borough	51	19.9	18.4	4	4	72
Newark, N. J	117	13.5	14.2	12	19	55
Norfolk	37	11.4	15.6	1	2	18
Oakland	39	8.0	11.2	2	6	23
Oklahoma City	19	9.3	13.0	1	2	
Omaha	76	18.7	17.0	7	4	67
Paterson	52	19.1	12.2	7	4	117
Philadelphia	543	14.3	16.0	58	58	73
Pittsburgh	220	18.2	22.2	29	52	102
Portland, Oreg	71	13.1	13.5	3	7	31
Providence	88	18.7	15.0	19	10	152
Richmond	46	12.9	15.0	6	5	73
Rochester	86	13.5		9		71
St. Louis	311	19.7	16.4	24	19	
St. Paul	64	13.6	13.0	4	5	34
Salt Lake City [4]	30	12.0	14.6	6	3	94
San Antonio	75	19.7	15.8	12	5	
San Francisco	149	13.9	12.1	9	5	52
Schenectady	27	13.8	13.5	2	7	56
Seattle	72			6	6	61
Somerville	21	10.7	9.3	3	5	80
Spokane	28			1	2	22
Springfield, Mass	49	16.7	16.5	3	9	45
Syracuse	55	15.0	14.7	5	6	63
Tacoma	22	11.0	11.6	4	0	95
Toledo	90	16.3	14.9	9	12	81
Trenton	41	16.2	14.9	8	6	130
Washington, D. C	131	13.7	13.5	20	10	112
Waterbury	24			5	4	111
Wilmington, Del	25	10.7	13.0	2	3	46
Worcester	48	12.6	11.2	5	4	58
Yonkers	35	16.3	14.3	3	8	66
Youngstown	37	12.1	15.5	6	6	76

[4] Deaths for week ended Friday, Mar. 27, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended April 4, 1925

	Cases
Cerebrospinal meningitis	8
Chicken pox	42
Diphtheria	8
Dysentery	3
Influenza	388
Malaria	22
Measles	36
Mumps	70
Pellagra	28
Pneumonia	159
Scarlet fever	29
Smallpox	148
Tuberculosis	39
Typhoid fever	8
Whooping cough	13

ARIZONA

	Cases
Chicken pox	12
Diphtheria	4
Influenza	7
Measles	92
Mumps	2
Ophthalmia neonatorum	2
Scarlet fever	24
Smallpox	4
Trachoma	1
Tuberculosis	8
Typhoid fever	2

ARKANSAS

	Cases
Cerebrospinal meningitis	1
Chicken pox	5
Diphtheria	5
Hookworm disease	2
Influenza	170
Malaria	22
Measles	19

ARKANSAS—continued

	Cases
Mumps	26
Pellagra	10
Scarlet fever	3
Smallpox	6
Trachoma	2
Tuberculosis	10
Typhoid fever	14

CALIFORNIA

	Cases
Cerebrospinal meningitis - Los Angeles	1
Diphtheria	118
Influenza	122
Lethargic encephalitis—Berkeley	1
Measles	132
Poliomyelitis—Oakland	1
Scarlet fever	138
Smallpox:	
Los Angeles	50
Los Angeles County	16
San Diego	23
San Francisco	10
San Jose	8
Scattering	56
Typhoid fever	8

COLORADO

(Exclusive of Denver)

	Cases
Anthrax	1
Chicken pox	37
Diphtheria	19
Influenza	7
Mumps	23
Pneumonia	6
Scarlet fever	39
Tuberculosis	30
Typhoid fever	2
Whooping cough	14

CONNECTICUT

	Cases
Cerebrospinal meningitis	4
Chicken pox	63
Conjunctivitis (infectious)	2
Diphtheria	36
German measles	48
Influenza	20
Lethargic encephalitis	2
Measles	235
Mumps	47
Paratyphoid fever	7
Pneumonia (all forms)	84
Scarlet fever	135
Trachoma	1
Tuberculosis (all forms)	44
Typhoid fever	3
Whooping cough	81

DELAWARE

Chicken pox	3
Diphtheria	1
Influenza	3
Measles	2
Mumps	5
Pneumonia	3
Scarlet fever	2
Smallpox	1
Tuberculosis	4
Whooping cough	2

FLORIDA

Chicken pox	5
Diphtheria	4
Malaria	10
Measles	2
Mumps	13
Pneumonia	2
Scarlet fever	2
Smallpox	10
Tuberculosis	17
Typhoid fever	11
Whooping cough	10

ILLINOIS

Diphtheria:	
Cook County	65
Scattering	38
Influenza	101
Lethargic encephalitis—Cook County	3
Measles	1,158
Pneumonia	370
Scarlet fever:	
Cook County	321
Kane County	8
Knox County	10
Madison County	8
Peoria County	10
St. Clair County	9
Schuyler County	12
Scattering	73
Smallpox	
Ogle County	14
St. Clair County	34
Vermilion County	23
Scattering	
Typhoid fever	13

INDIANA

	Cases
Cerebrospinal meningitis	1
Chicken pox	62
Diphtheria	34
Influenza	270
Measles	167
Mumps	1
Ophthalmia neonatorum	2
Pneumonia	21
Scarlet fever:	
Allen County	9
Cass County	11
Delaware County	15
Elkhart County	18
Fulton County	11
Huntington County	18
St. Joseph County	31
Vanderburgh County	11
Vigo County	8
Scattering	82
Smallpox	83
Trachoma	1
Tuberculosis	30
Typhoid fever	8
Whooping cough	41

IOWA

Diphtheria	13
Poliomyelitis—Buffalo Center	2
Scarlet fever	35
Smallpox	16
Typhoid fever	1

KANSAS

Chicken pox	113
Diphtheria	20
German measles	2
Influenza	52
Measles	14
Mumps	354
Pneumonia	62
Scarlet fever	111
Smallpox	15
Trachoma	1
Tuberculosis	37
Typhoid fever	2
Whooping cough	56

LOUISIANA

Cerebrospinal meningitis	1
Diphtheria	13
Hookworm disease	9
Influenza	165
Leprosy	1
Malaria	12
Pellagra	7
Pneumonia	55
Scarlet fever	7
Smallpox	13
Tuberculosis	37
Typhoid fever	15
Whooping cough	15

MAINE

Chicken pox	20
Conjunctivitis	1

MAINE—continued

	Cases
German measles	1
Influenza	74
Measles	1
Mumps	105
Pneumonia	17
Scarlet fever	46
Septic sore throat	1
Tuberculosis	12
Typhoid fever	5
Whooping cough	2

MARYLAND [1]

Cerebrospinal meningitis	2
Chicken pox	79
Diphtheria	29
German measles	6
Influenza	40
Lethargic encephalitis	3
Measles	25
Mumps	137
Ophthalmia neonatorum	1
Pneumonia (all forms)	110
Scarlet fever	78
Septic sore throat	2
Tuberculosis	39
Typhoid fever	8
Whooping cough	80

MASSACHUSETTS

Cerebrospinal meningitis	4
Chicken pox	133
Conjunctivitis (suppurative)	7
Diphtheria	104
German measles	203
Influenza	84
Lethargic encephalitis	2
Measles	738
Mumps	86
Ophthalmia neonatorum	31
Pneumonia (lobar)	177
Scarlet fever	283
Trachoma	2
Trichinosis	2
Tuberculosis (all forms)	115
Typhoid fever	7
Typhus fever	2
Whooping cough	24

MICHIGAN

Diphtheria	64
Measles	174
Pneumonia	154
Scarlet fever	380
Smallpox	24
Tuberculosis	46
Typhoid fever	14
Whooping cough	78

MINNESOTA

Cerebrospinal meningitis	2
Chicken pox	106
Diphtheria	59
Influenza	1
Lethargic encephalitis	1
Measles	16
Pneumonia	6

[1] Week ended Friday.

MINNESOTA—continued

	Cases
Scarlet fever	249
Smallpox	12
Tuberculosis	86
Typhoid fever	1
Whooping cough	23

MISSISSIPPI

Diphtheria	4
Influenza	205
Scarlet fever	40
Smallpox	40
Typhoid fever	8

MISSOURI

(Exclusive of Kansas City)

Cerebrospinal meningitis	1
Chicken pox	96
Diphtheria	72
Influenza	139
Measles	21
Mumps	144
Pneumonia	89
Rabies	2
Scarlet fever	419
Smallpox	19
Tetanus	1
Trachoma	2
Tuberculosis	81
Typhoid fever	5
Whooping cough	25

MONTANA

Chicken pox	7
Diphtheria	10
German measles	38
Measles	9
Mumps	18
Rocky Mountain spotted fever—Lolo	1
Scarlet fever	39
Smallpox	4
Tuberculosis	7
Whooping cough	7

NEW JERSEY

Anthrax	2
Cerebrospinal meningitis	3
Chicken pox	149
Diphtheria	102
Influenza	26
Measles	246
Pneumonia	171
Poliomyelitis	1
Scarlet fever	310
Smallpox	25
Trachoma	2
Thphoid fever	6
Whooping cough	331

NEW MEXICO

Chicken pox	14
Conjunctivitis	1
Diphtheria	5
Favus	1
Influenza	4
Measles	68
Mumps	15

NEW MEXICO—continued

	Cases
Pneumonia	7
Scarlet fever	3
Smallpox	2
Tuberculosis	13
Typhoid fever	2
Whooping cough	5

NEW YORK

(Exclusive of New York City)

Diphtheria	83
Influenza	282
Lethargic encephalitis	3
Pneumonia	440
Measles	526
Poliomyelitis	1
Scarlet fever	375
Smallpox	4
Typhoid fever	21
Whooping cough	215

NORTH CAROLINA

Chicken pox	110
Diphtheria	34
German measles	4
Measles	43
Scarlet fever	23
Septic sore throat	1
Smallpox	56
Typhoid fever	1
Whooping cough	122

OREGON

Cerebrospinal meningitis	1
Chicken pox	11
Diphtheria:	
Portland	16
Scattering	9
Influenza	302
Lethargic encephalitis	1
Mumps	63
Pneumonia	12
Poliomyelitis	1
Rocky Mountain spotted fever	1
Scarlet fever:	
Portland	12
Clackamas County	9
Scattering	10
Smallpox:	
Columbia County	9
Scattering	5
Tuberculosis	22
Whooping cough	26

TEXAS

Cerebrospinal meningitis	1
Chicken pox	100
Diphtheria	33
Dysentery (epidemic)	5
Influenza	375
Lethargic encephalitis	1
Measles	93
Mumps	56
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pellagra	27
Pneumonia	41

TEXAS—continued

	Cases
Scarlet fever	41
Smallpox	57
Trachoma	1
Tuberculosis	30
Typhoid fever	7
Typhus fever	2
Whooping cough	30

VERMONT

Chicken pox	14
Diphtheria	1
Measles	3
Mumps	75
Scarlet fever	1
Typhoid fever	1
Whooping cough	30

VIRGINIA

Smallpox—Fairfax County	1

WASHINGTON

Cerebrospinal meningitis—Spokane	3
Chicken pox	89
Diphtheria	80
German measles	138
Measles	17
Mumps	177
Scarlet fever	34
Smallpox	54
Tuberculosis	14
Typhoid fever	4
Whooping cough	75

WEST VIRGINIA

Diphtheria	3
Scarlet fever	9
Smallpox	5
Typhoid fever	2

WISCONSIN

Milwaukee	
Chicken pox	33
Diphtheria	14
German measles	389
Influenza	1
Measles	269
Mumps	98
Ophthalmia neonatorum	2
Pneumonia	5
Scarlet fever	15
Smallpox	17
Tuberculosis	20
Whooping cough	55
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	158
Diphtheria	19
German measles	242
Influenza	160
Lethargic encephalitis	1
Measles	292
Mumps	298
Pneumonia	32
Scarlet fever	163
Smallpox	22
Tuberculosis	21
Typhoid fever	6
Whooping cough	51

WYOMING

	Cases
Cerebrospinal meningitis	1
Chicken pox	11
Diphtheria	2
German measles	1
Measles	16
Mumps	10

WYOMING—continued

	Cases
Pneumonia	3
Rocky Mountain spotted fever	3
Scarlet fever	8
Typhoid fever	2
Whooping cough	6

Reports for Week Ended March 28, 1925

DISTRICT OF COLUMBIA

	Cases
Chicken pox	33
Diphtheria	10
Measles	30
Pneumonia	27
Scarlet fever	27
Smallpox	3
Tuberculosis	25
Whooping cough	17

NORTH DAKOTA

	Cases
Chicken pox	21
Diphtheria	5
Measles	1
Mumps	15
Pneumonia	12
Poliomyelitis	1
Scarlet fever	42
Smallpox	6
Tuberculosis	3
Typhoid fever	2
Whooping cough	8

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
January, 1925										
California	7	636	195	2	185	2	16	686	695	50
Nebraska		59	7					107		12
Tennessee	11	84	589	13	116	23	1	95	447	44
February, 1925										
Colorado	3	97	18		19			174	1	11
Georgia	2	70	3,388	69	12	20		34	61	41
Nebraska	2	41	34					112		11
Ohio	5	421	189	0	560	0	2	2,136	550	49
Oregon	4	101	17		17		4	115	114	15
Washington	1	211	0	0	39	0	2	201	262	20

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended March 21, 1925.

Los Angeles, Calif.

Week ended Mar. 21, 1925:	
Number of rats examined	3,831
Number of rats found to be plague infected	2
Number of squirrels examined	758
Number of squirrels found to be plague infected	0
Totals to Mar. 21, 1925:	
Number of rats examined	67,549
Number of rats found to be plague infected	152
Number of squirrels examined	5,435
Number of squirrels found to be plague infected	3

Oakland, Calif.

(Including other East Bay communities)

Week ended Mar. 21, 1925:	
Number of rats examined	3, 123
Number of rats found to be plague infected	0
Totals to Mar. 21, 1925:	
Number of rats examined	26, 912
Number of rats found to be plague infected	21

New Orleans, La.

Week ended Mar. 21, 1925:	
Number of vessels inspected	387
Number of inspections made	932
Number of vessels fumigated with cyanide gas	39
Number of rodents examined for plague	4, 505
Number of rodents found to be plague infected	0
Totals to Mar. 21, 1925:	
Number of rodents examined for plague	60, 223
Number of rodents found to be plague infected	12

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended March 21, 1925, 34 States reported 1,410 cases of diphtheria. For the week ended March 22, 1924, the same States reported 1,768 cases of this disease. One hundred and five cities, situated in all parts of the country and having an aggregate population of nearly 28,900,000, reported 925 cases of diphtheria for the week ended March 21, 1925. Last year for the corresponding week they reported 1,113 cases. The estimated expectancy for these cities was 1,011 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty States reported 4,335 cases of measles for the week ended March 21, 1925, and 18,364 cases of this disease for the week ended March 22, 1924. One hundred and five cities reported 2,802 cases of measles for the week this year, and 7,026 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 34 States—this year, 4,263 cases; last year, 4,179; 105 cities—this year, 2,369; last year, 1,928; estimated expectancy, 1,099 cases.

Smallpox.—For the week ended March 21, 1925, 34 States reported 995 cases of smallpox. Last year, for the corresponding week, they reported 1,281 cases. One hundred and five cities reported smallpox for the week as follows: 1925, 351 cases; 1924, 565 cases; estimated expectancy, 114 cases. These cities reported 12 deaths from smallpox for the week this year; 3 at Camden, N. J.; 1 at Chicago; 3 at Milwaukee; 3 at Minneapolis; 1 at St. Paul, and 1 at San Francisco.

Typhoid fever.—On hundred and seventy-nine cases of typhoid fever were reported for the week ended March 21, 1925, by 33 States. For the corresponding week of 1924 the same States reported 236 cases. One hundred and five cities reported 65 cases of typhoid fever for the week this year, and 60 cases for the corresponding week last year. The estimated expectancy for these cities was 48 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 105 cities as follows: 1925, 1,395 deaths; 1924, 1,258 deaths.

City reports for week ended March 21, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence, how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine.									
Portland	73,129	18	2	1	2	0	1	38	4
New Hampshire:									
Concord	22,408	0	0	0	0	0	0	0	2
Manchester	81,383		2	1		2	6		6
Vermont:									
Barre	[1] 10,008	2	0	0		2	0	8	0
Massachusetts:									
Boston	770,400	29	62	30	8	1	220	1	25
Fall River	120,912	6	4	1	3	3	0	0	8
Springfield	144,277	6	4	2	4	2	35	7	3
Worcester	191,927	37	4	3	0	0	6	1	10
Rhode Island									
Pawtucket	68,799	3	1	1	0	0	0	0	6
Providence	242,378	0	11	6	4	1	1	0	13
Connecticut.									
Bridgeport	[1] 143,555	0	7	5	2	0	0	0	3
Hartford	[1] 138,036	7	9	8	3	1	1	2	6
New Haven	172,967	18	4	2	2	2	28	1	5
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	0	16	0		2	108	9	21
New York	5,927,625	165	233	211	83	26	121	35	237
Rochester	317,867	6	7	16		2	33	32	6
Syracuse	184,511	8	6	2		2	2	23	7
New Jersey:									
Camden	124,157	8	4	6	0	0	27	5	6
Newark	438,699	29	18	18	15	1	55	9	19
Trenton	127,390	1	5	4	0	0	8	0	2
Pennsylvania:									
Philadelphia	1,922,788	67	76	116		12	361	19	51
Pittsburgh	613,442	69	21	13		13	429	52	79
Reading	110,917	10	3	2	0	0	37	9	0
Scranton	140,636	4	3	7	0	0	1	0	5

[1] Population Jan. 1, 1920.

City reports for week ended March 21, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	16	10	18	3	5	2	10	21
Cleveland	888,519	66	27	33	8	3	4	12	29
Columbus	261,082	7	4	2	-------	13	2	3	18
Toledo	268,338	31	4	7	-------	3	81	0	2
Indiana:									
Fort Wayne	93,573	5	3	1	0	0	2	0	1
Indianapolis	342,718	23	9	3	-------	3	2	9	30
South Bend	76,709	3	1	3	0	0	1	0	9
Terre Haute	68,939	0	1	1	-------	1	2	0	5
Illinois:									
Chicago	2,886,121	67	108	65	340	30	514	26	108
Cicero	55,968	1	1	1	7	0	3	1	1
Peoria	79,675	7	1	0	0	0	1	5	4
Springfield	61,833	7	1	1	7	0	1	40	5
Michigan:									
Detroit	995,668	30	54	36	11	6	14	13	56
Flint	117,968	8	5	1	-------	1	1	1	3
Grand Rapids	145,947	10	3	1	3	1	50	0	0
Wisconsin:									
Madison	42,519	3	1	0	0	0	6	104	7
Milwaukee	484,595	51	15	11	-------	2	421	127	3
Racine	64,393	11	1	4	-------	1	20	14	1
Superior	[1] 39,671	2	1	0	0	0	0	0	3
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	6	1	0	0	0	0	0	5
Minneapolis	409,125	58	15	22	-------	2	10	11	14
St. Paul	241,891	15	11	10	0	0	19	25	10
Iowa:									
Davenport	61,262	0	1	2	0	-------	0	0	-------
Des Moines	140,923	0	3	2	0	-------	0	0	-------
Sioux City	79,662	3	2	0	0	-------	0	35	-------
Waterloo	39,667	11	0	0	0	-------	0	2	-------
Missouri:									
Kansas City	351,819	16	10	6	13	14	3	38	28
St. Joseph	78,232	2	2	1	0	0	0	1	3
St. Louis	803,853	18	40	50	3	2	12	6	-------
North Dakota:									
Fargo	24,841	4	1	1	0	0	0	12	0
Grand Forks	14,547	0	1	0	0	-------	0	0	-------
South Dakota:									
Aberdeen	15,829	0	-------	0	0	-------	0	1	-------
Sioux Falls	29,206	3	1	0	7	0	0	0	0
Nebraska:									
Lincoln	58,761	11	2	3	0	0	0	5	0
Omaha	204,582	6	4	0	0	0	0	0	15
Kansas:									
Topeka	52,555	5	1	3	7	1	0	159	1
Wichita	79,261	14	1	3	0	0	1	1	3
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	3	2	11	0	0	14	1	4
Maryland:									
Baltimore	773,580	71	25	27	23	10	8	30	67
Cumberland	32,361	-------	1	1	0	1	0	-------	1
Frederick	11,301	-------	1	0	0	1	0	-------	0
District of Columbia:									
Washington	[1] 437,571	10	11	14	-------	6	38	-------	18
Virginia:									
Lynchburg	30,277	1	0	0	0	0	0	28	2
Norfolk	159,089	19	1	5	0	0	3	68	5
Richmond	181,044	0	2	0	0	0	0	0	5
Roanoke	55,502	5	1	0	-------	1	4	1	1
West Virginia:									
Charleston	45,597	1	1	0	0	0	21	5	3
Huntington	57,918	0	1	0	0	-------	0	0	-------
Wheeling	[1] 56,208	3	2	2	0	0	2	1	3
North Carolina:									
Raleigh	29,171	13	0	0	-------	1	0	0	1
Wilmington	35,719	3	0	0	-------	1	0	7	0
Winston-Salem	56,230	6	1	1	-------	1	3	1	2

[1] Population Jan. 1, 1920.

City reports for week ended March 21, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC—con.									
South Carolina:									
Charleston	71,245	0	0	3	0	0	0	0	6
Columbia	39,688	3	1	0	0	0	0	3	3
Greenville	25,789	0	0	0	0	0	0	0	4
Georgia:									
Atlanta	222,963	2	2	2	2	2	0	0	15
Brunswick	15,937		0	0	2	0	0		0
Savannah	89,448	2	1	0	16	1	0	8	2
Florida:									
St. Petersburg	24,403	0	1	0	0	0	0	0	0
Tampa	56,050	2	2	1	1	1	0	2	1
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	1	1	2	1	0	0	2
Louisville	257,671	0	5	0	18	2	2	0	21
Tennessee:									
Memphis	170,067		6	2		3	1		5
Nashville	121,128	1	1	1		5	8	0	3
Alabama:									
Birmingham	195,901	9	2	7	8	6	1	6	17
Mobile	63,858	1	1	1	2	4	0	2	2
Montgomery	45,383	5	0	0	0	0	0	10	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	3	1	0	0		1	6	
Little Rock	70,916	3	1	2	11	2	5	0	0
Louisiana:									
New Orleans	404,575	7	11	5	15	7	2	0	10
Shreveport	54,590	2		0	0	0	1	0	5
Oklahoma:									
Oklahoma	101,150	2	1	0	6	2	0	0	2
Tulsa	102,018		1	0	0		3		
Texas:									
Dallas	177,274	23	3	10	6	1	0	1	3
Galveston	46,877	0	1	0	0	0	0	2	1
Houston	154,970	6	2	1		4	0	0	8
San Antonio	184,727	0	2	3		1	0	0	8
MOUNTAIN									
Montana:									
Billings	16,927	3	1	0	0	0	1	13	1
Great Falls	27,787	3	1	2	0	0	55	4	3
Helena	[1] 12,037	0	0	0	0	0	0	0	0
Missoula	[1] 12,668	0	1	0	0	0	0	0	0
Idaho:									
Boise	22,806	4	0	0	0	0	0	1	0
Colorado:									
Denver	272,031	27	8	7		5	2	105	11
Pueblo	43,519	8	2	0	0	0	0	11	3
New Mexico:									
Albuquerque	16,648	1	1	1	0	0	1	0	0
Arizona:									
Phoenix	33,899	0		0		3	4	0	3
Utah:									
Salt Lake City	126,241	12	2	6	0	0	2	38	0
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	52	5	3	0		3	67	
Spokane	104,573	6	2	30	0		0	0	
Tacoma	101,731	2	1	1	1	0	1	1	1
Oregon:									
Portland	273,621	6	3	11	2	0	3	8	10
California:									
Los Angeles	666,853	91	87	33	57	3	46	43	22
Sacramento	69,950		1	1	1	0	0		1
San Francisco	539,038	20	26	18	7	0	15	54	8

[1] Population Jan. 1, 1920.

City reports for week ended March 21, 1925—**Continued**

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	1	14	0	0	0	1	0	0	0	3	29
New Hampshire:											
Concord	1	0	0	0	0	1	0	0	0	0	8
Manchester	2	15	0	0	0	0	0	0	0		20
Vermont:											
Barre	0	3	0	0	0	1	0	0	0	0	6
Massachusetts:											
Boston	59	89	1	0	0	24	1	7	0	44	265
Fall River	3	6	0	0	0	2	0	0	0	10	37
Springfield	7	28	0	0	0	5	0	0	0	5	47
Worcester	8	7	0	0	0	3	0	4	0	12	53
Rhode Island:											
Pawtucket	2	3	0	0	0	0	1	0	0	0	19
Providence	10	13	0	0	0	1	0	1	0	0	61
Connecticut:											
Bridgeport	7	13	1	0	0	0	0	0	0	0	36
Hartford	6	11	0	0	0	1	0	0	0	15	42
New Haven	6	32	0	0	0	4	1	0	0	11	57
MIDDLE ATLANTIC											
New York:											
Buffalo	19	30	0	0	0	5	1	0	2	29	165
New York	208	353	0	0	0	[1] 94	8	6	2	138	1,581
Rochester	12	54	0	0	0	2	0	2	0	4	74
Syracuse	15	4	0	0	0	1	0	0	0	0	60
New Jersey:											
Camden	3	30	0	4	3	2	0	1	0	2	40
Newark	24	65	0	0	0	5	0	0	0	70	121
Trenton	4	3	0	0	0	2	1	1	0	1	34
Pennsylvania:											
Philadelphia	66	198	0	11	0	33	3	4	0	92	535
Pittsburgh	21	72	0	0	0	18	0	2	0	12	268
Reading	3	16	0	0	0	0	0	0	0	3	24
Scranton	4	1	0	0	0	2	1	0	0	12	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	12	19	2	0	0	16	0	2	0	3	162
Cleveland	36	32	1	0	0	22	2	1	0	27	218
Columbus	8	21	2	6	0	4	1	0	0	1	92
Toledo	14	29	4	0	0	7	1	1	1	40	74
Indiana:											
Fort Wayne	3	4	1	1	0	0	1	0	0	0	25
Indianapolis	11	3	2	7	0	6	0	0	0	23	116
South Bend	3	15	1	1	0	0	0	0	0	0	19
Terre Haute	3	7	1	1	0	2	0	0	0	0	33
Illinois:											
Chicago	89	299	3	0	1	42	3	2	1	146	819
Cicero	1	11	0	0	0	0	0	0	0	0	15
Peoria	3	11	1	0	0	1	0	0	0	3	17
Springfield	1	5	1	0	0	0	0	0	0	0	27
Michigan:											
Detroit	83	142	4	5	0	28	1	2	1	46	331
Flint	7	6	1	4	0	1	0	0	0	3	17
Grand Rapids	9	69	1	0	0	2	0	2	0	0	35
Wisconsin:											
Madison	3	8	0	0	0	0	0	0	0	3	13
Milwaukee	34	13	1	15	3	0	1	0	0	18	133
Racine	5	3	0	3	0	0	0	0	0	0	11
Superior	2	15	5	0	0	2	0	0	0	0	11
WEST NORTH CENTRAL											
Minnesota:											
Duluth	5	19	1	0	0	0	0	0	0	2	25
Minneapolis	34	91	7	4	3	5	1	1	0	2	127
St. Paul	26	32	7	3	1	6	0	2	0	17	74

[1] Pulmonary tuberculosis only.

City reports for week ended March 21, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL—con.											
Iowa:											
Davenport	2	0	2	7			0	0		0	
Des Moines	9	5	2	1			0	0		0	
Sioux City	2	0	1	0			0	0		0	
Waterloo	3	0	0	6			0	0		0	
Missouri:											
Kansas City	11	122	3	3	0	12	0	0	0	8	149
St. Joseph	2	4	0	0	0	4	0	0	0	0	29
St. Louis	31	103	3	13	0	14	1	0	0	6	246
North Dakota:											
Fargo	2	3	0	0	0	0	0	1	0	0	6
Grand Forks	1	0	0	0			0	0		0	
South Dakota:											
Aberdeen		1		0				0		2	
Sioux Falls	3	2	1	0	0	0	0	0	0	0	6
Nebraska:											
Lincoln	4	1	1	0	0	0	0	0	0	1	13
Omaha	5	2	2	20	0	2	0	0	0	0	69
Kansas:											
Topeka	2	2	1	0	0	1	0	0	0	0	16
Wichita	2	2	4	0	0	0	0	0	0	11	31
SOUTH ATLANTIC											
Delaware:											
Wilmington	2	1	0	0	0	2	0	0	0	2	33
Maryland:											
Baltimore	37	26	0	0	0	27	2	3	0	90	308
Cumberland	1	0	0	0	0	0	0	2	0		7
Frederick	1	0	0	0	0	0	0	0	0		5
District of Col.:											
Washington	22	27	1	0	0	15	1	3	0	18	150
Virginia:											
Lynchburg	1	0	0	0	0	0	0	0	0	3	8
Norfolk	2	1	0	0	0	4	0	0	0	3	
Richmond	3	0	0	0	0	4	0	0	0	0	35
Roanoke	1	0	0	0	0	1	0	0	0	2	21
West Virginia:											
Charleston	1	1	1	0	0	1	0	0	0	1	15
Huntington	1	2	0	1			0	0		0	
Wheeling	1	2	0	0	0	0	1	3	0	3	20
North Carolina:											
Raleigh	0	0	0	7	0	2	0	0	0	0	18
Wilmington	0	0	0	0	0	0	0	0	0	2	12
Winston-Salem	1	6	2	12	0	1	0	0	0	5	18
South Carolina:											
Charleston	1	1	0	0	0	1	0	0	0	1	30
Columbia	1	1	0	0	0	3	0	0	0	11	25
Greenville	0	0	1	6	0	0	0	0	0	1	13
Georgia:											
Atlanta	5	6	4	3	0	5	1	0	1	3	66
Brunswick	0	0	0	0	0	0	0	0	0		2
Savannah	1	0	0	0	0	1	0	0	0	6	27
Florida:											
St. Petersburg	3	0	0	0	0	0	1	0	1	0	8
Tampa	0	0	0	0	0	2	2	0	0	1	35
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	0	1	0	0	1	1	2	0	0	11
Louisville	5	12	1	8	0	7	0	0	0	3	104
Tennessee:											
Memphis	3	6	1	14	0	6	1	3	1		84
Nashville	1	9	1	4	0	5	0	3	0	3	
Alabama:											
Birmingham	1	20	0	85	0	8	1	0	1	1	82
Mobile	0	1	2	0	0	1	0	0	0	0	27
Montgomery	1	2	1	2	0	0	0	0	0	0	11

City reports for week ended March 21, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	3	1	1			0	0		0	
Little Rock	1	4	1	1	0	1	0	2	0	0	
Louisiana:											
New Orleans	4	15	4	0	0	19	2	2	0	4	146
Shreveport		1		0	0	0		0	0	0	22
Oklahoma:											
Oklahoma	2	1	5	0	0	0	0	1	0	3	30
Tulsa	1	0	3	1			0	0			
Texas:											
Dallas	1	2	7	1	0	1	1	1	1	1	32
Galveston	0	0	0	4	0	0	1	0	0	0	7
Houston	1	3	1	16	0	4	0	0	0	0	46
San Antonio	1	1	0	0	0	10	1	0	0	0	57
MOUNTAIN											
Montana:											
Billings	1	7	1	0	0	0	0	0	0	3	7
Great Falls	1	4	1	1	0	0	0	0	0	0	11
Helena	0	0	0	0	0	2	0	0	0	0	6
Missoula	1	0	0	0	0	0	0	0	0	0	1
Idaho:											
Boise	1	0	1	0	0	0	0	0	0	0	3
Colorado:											
Denver	12	26	3	0	0	11	0	0	0	2	79
Pueblo	1	1	0	0	0	3	0	0	0	0	11
New Mexico:											
Albuquerque	1	0	0	0	0	4	0	0	0	0	12
Arizona:											
Phoenix		1		0	0	8		0	0	2	29
Utah:											
Salt Lake City	3	5	2	0	0	2	1	0	0	5	34
Nevada:											
Reno	0	2	0	6	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle	10	13	1	17			0	0		58	
Spokane	4	2	9	1			0	0		2	
Tacoma	2	0	2	2	0	2	0	0	0	0	22
Oregon:											
Portland	6	6	5	11	0	3	0	2	0	9	
California:											
Los Angeles	14	54	2	35	0	17	2	0	0	76	268
Sacramento	2	0	0	3	0	0	0	0	0		17
San Francisco	17	6	4	15	1	12	2	0	0	33	154

Division, State, and city	Cerebrospinal meningitis: Cases	Cerebrospinal meningitis: Deaths	Lethargic encephalitis: Cases	Lethargic encephalitis: Deaths	Pellagra: Cases	Pellagra: Deaths	Poliomyelitis (infantile paralysis): Cases, estimated expectancy	Poliomyelitis (infantile paralysis): Cases	Poliomyelitis (infantile paralysis): Deaths
NEW ENGLAND									
New Hampshire:									
Concord	0	0	0	0	0	0	0	1	0
Massachusetts:									
Boston	1	1	0	0	0	0	1	0	0
Connecticut:									
Bridgeport	1	1	0	0	0	0	0	0	0

City reports for week ended March 21, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
MIDDLE ATLANTIC									
New York:									
New York	1	3	7	7	0	0	0	1	0
New Jersey:									
Newark	1	0	2	0	0	0	0	1	0
Pennsylvania:									
Philadelphia	0	0	0	1	1	0	0	0	0
Scranton	0	1	0	0	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio									
Cleveland	0	2	0	0	0	0	1	0	0
Indiana									
South Bend	0	0	0	0	0	0	0	0	1
Illinois:									
Chicago	2	2	3	0	0	0	1	0	0
Springfield	1	0	0	0	0	0	0	0	0
Michigan									
Detroit	3	0	0	0	0	0	1	0	0
WEST NORTH CENTRAL									
Minnesota									
St. Paul	0	0	1	0	0	0	0	0	0
Missouri									
St. Louis	1	1	0	0	0	0	0	0	0
Nebraska:									
Omaha	0	0	0	1	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	0	1	1	0	0	0	0	0
District of Columbia:									
Washington	0	0	0	0	0	0	0	1	0
Virginia:									
Norfolk	0	0	0	1	1	0	0	0	0
West Virginia:									
Wheeling	0	1	0	0	0	0	0	0	0
North Carolina:									
Winston-Salem	0	0	0	0	0	1	0	0	0
South Carolina:									
Columbia	1	1	0	0	0	1	0	0	0
Georgia:									
Savannah	0	0	0	0	2	0	0	0	0
Florida:									
St. Petersburg	0	1	0	0	0	0	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	0	0	0	0	1	1	0	0	0
Nashville	0	0	0	0	0	1	0	0	0
Alabama:									
Birmingham	0	0	0	0	1	0	0	1	0
Montgomery	0	0	0	0	1	1	0	0	0
WEST SOUTH CENTRAL									
Texas:									
Dallas	1	0	0	0	0	0	0	0	0
San Antonio	0	0	0	1	0	0	0	0	0
MOUNTAIN									
Colorado:									
Denver	0	0	0	1	0	0	0	0	0
PACIFIC									
California:									
Los Angeles	1	0	0	0	2	2	0	0	0
San Francisco	0	0	1	2	0	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended March 21, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, January 11 to March 21, 1925—Annual rates per 100,000 population [1]

	Week ended—										
	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21
DIPHTHERIA CASE RATES											
Total	169	[2] 172	[2] 163	[3] 166	[2] 175	[2] 168	149	[4] 169	162	[5] 168	167
New England	256	179	171	199	191	246	241	[4] 189	233	176	147
Middle Atlantic	181	188	175	155	171	165	163	178	167	214	196
East North Central	132	141	130	[3] 135	145	132	123	119	114	128	134
West North Central	143	255	199	251	255	259	209	299	282	201	199
South Atlantic	173	[2] 106	[2] 138	128	[2] 153	[2] 183	156	114	104	[6] 93	136
East South Central	120	91	80	97	63	69	80	51	63	[7] 40	60
West South Central	144	195	162	148	176	162	125	162	144	158	97
Mountain	239	153	239	134	191	95	162	153	86	105	143
Pacific	194	206	223	293	270	180	165	258	235	197	249
MEASLES CASE RATES											
Total	215	[2] 141	[2] 213	[3] 214	[2] 254	[2] 297	383	[4] 358	418	[5] 451	506
New England	395	440	497	484	576	661	720	[4] 585	656	542	725
Middle Atlantic	169	157	187	205	205	287	373	343	428	518	598
East North Central	417	127	379	[3] 373	453	515	688	632	789	740	775
West North Central	19	12	27	21	17	31	27	73	68	75	93
South Atlantic	83	[2] 43	[2] 38	37	[2] 49	[2] 98	110	81	100	[6] 150	189
East South Central	29	46	74	91	51	74	51	46	86	[7] 7	69
West South Central	5	23	14	14	37	51	14	51	23	88	42
Mountain	134	267	248	286	782	153	620	916	29	763	573
Pacific	194	160	55	17	61	29	64	61	107	110	189
SCARLET FEVER CASE RATES											
Total	369	[2] 355	[2] 370	[3] 364	[2] 412	[2] 400	390	[4] 408	395	[5] 432	427
New England	661	561	596	534	614	564	606	[4] 558	584	534	544
Middle Atlantic	324	294	326	322	373	407	376	412	372	439	417
East North Central	383	375	369	[3] 379	426	397	432	434	433	497	498
West North Central	757	755	804	779	871	728	742	734	775	719	792
South Atlantic	160	[2] 243	[2] 189	185	[2] 255	[2] 277	167	203	171	[6] 224	146
East South Central	229	183	183	217	97	212	223	183	194	[7] 336	286
West South Central	148	116	195	204	162	121	125	144	185	107	134
Mountain	382	534	305	258	334	382	248	315	286	200	429
Pacific	189	183	220	226	258	177	186	223	218	229	218
SMALLPOX CASE RATES											
Total	57	[2] 58	[2] 70	[3] 67	[2] 76	[2] 79	66	[4] 66	62	[5] 61	63
New England	0	0	0	0	0	0	0	[4] 0	0	0	0
Middle Atlantic	3	10	6	9	2	4	2	3	1	5	8
East North Central	40	39	48	[3] 35	39	35	56	28	42	39	32
West North Central	220	193	180	195	145	193	126	120	114	124	102
South Atlantic	30	[2] 64	[2] 38	45	[2] 62	[2] 98	67	43	51	[6] 60	57
East South Central	395	217	675	652	823	675	532	583	652	[7] 495	646
West South Central	65	32	32	60	125	139	83	116	74	74	107
Mountain	29	57	95	48	29	162	86	57	48	95	67
Pacific	148	212	209	177	267	220	215	313	206	247	212

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Racine, Wis., not included.
[4] Hartford, Conn., not included.
[5] Tampa, Fla., and Nashville, Tenn., not included.
[6] Tampa, Fla., not included.
[7] Nashville, Tenn., not included.

Summary of weekly reports from cities, January 11 to March 21, 1925—Annual rates per 100,000 population—Continued

TYPHOID FEVER CASE RATES

	Week ended—										
	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21
Total	36	[2] 21	[2] 17	[3] 18	[2] 13	[2] 13	11	[4] 14	11	[5] 9	12
New England	15	25	20	7	30	20	0	[4] 13	7	5	30
Middle Atlantic	49	21	20	19	13	6	10	8	10	5	8
East North Central	23	23	11	[3] 10	8	6	6	7	11	4	7
West North Central	6	10	6	12	0	10	4	17	6	10	8
South Atlantic	55	[2] 21	[2] 11	37	[2] 17	[2] 34	8	20	8	[6] 21	22
East South Central	51	17	29	23	11	40	34	34	34	[7] 33	46
West South Central	70	70	42	60	23	46	42	42	28	28	23
Mountain	10	0	48	19	29	19	38	76	10	19	0
Pacific	26	6	15	3	17	12	23	9	15	15	0

INFLUENZA DEATH RATES

	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21
Total	21	[2] 22	[2] 22	[3] 23	[2] 30	[2] 28	30	[4] 34	30	[6] 34	42
New England	17	27	10	27	47	27	17	[4] 40	17	35	30
Middle Atlantic	20	18	20	16	24	22	21	20	15	24	29
East North Central	16	15	18	[3] 12	13	17	18	24	27	33	49
West North Central	13	2	20	15	20	11	22	37	35	33	42
South Atlantic	35	[2] 47	[2] 23	39	[2] 49	[2] 55	55	49	53	[6] 29	53
East South Central	46	46	63	74	69	63	74	126	103	106	120
West South Central	41	87	92	82	97	122	153	118	143	107	76
Mountain	19	29	10	38	57	57	57	19	19	48	48
Pacific	20	12	12	20	41	4	12	29	29	16	12

PNEUMONIA DEATH RATES

	Jan. 10	Jan. 17	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21
Total	192	[2] 215	[2] 211	[3] 206	[2] 225	[2] 222	216	[4] 201	205	[6] 223	217
New England	122	157	216	241	211	239	241	[4] 242	226	229	211
Middle Atlantic	228	260	234	230	253	231	216	185	210	214	217
East North Central	152	152	142	[3] 145	164	168	184	171	195	241	222
West North Central	90	107	120	118	134	131	131	166	140	175	173
South Atlantic	246	[2] 294	[2] 275	252	[2] 315	[2] 270	252	305	268	[6] 241	290
East South Central	292	189	320	303	326	320	320	292	269	422	286
West South Central	260	449	362	229	352	464	408	260	229	178	178
Mountain	229	248	324	315	191	277	219	267	162	210	172
Pacific	184	163	208	217	196	192	213	163	139	155	131

[2] Wilmington, Del., not included Report not received at time of going to press.
[3] Racine, Wis, not included
[4] Hartford, Conn , not included.
[5] Tampa, Fla., and Nashville, Tenn., not included.
[6] Tampa, Fla., not included
[7] Nashville, Tenn , not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

SMALLPOX ON VESSEL

Steamship "Eldridge"—At Port Townsend—From Yokohama and ports.—On March 23, 1925, the steamship *Eldridge* arrived at Port Townsend, Washington, from Yokohama, Kobe, and way ports, with a case of smallpox on board. The *Eldridge* left Yokohama, February 10, 1925, and touched at Kobe, Dairen, Tsingtao, and Manila.

BRAZIL

Regulations for public cleaning service—Pernambuco (Recife)—During January, 1925, regulations for the service of public cleaning at Pernambuco (Recife), Brazil, were issued by the municipal government. The service was placed under the prefect, whose administrative staff, consisting of a superintendent with two assistants, will have direct charge of the work, through managers appointed for groups of workmen. For the execution of the work the municipality was divided into two zones. Notice was to be given of the hours for garbage collection, and garbage receptacles were required to be in accordance with the type approved by the Public Health Department. In addition to garbage removal, public cleaning will include the washing and disinfecting of all stands for vehicles and animals. Cleaning in the second zone will include the removal of garbage from homes and from vacant lots and the cutting of grass and weeds in all streets and market places.

CANARY ISLANDS

Mortality, year 1924—Plague—Vaccination against plague—Las Palmas—Sanitary conditions.—During the year 1924, 1,551 deaths from all causes were reported at Las Palmas, Canary Islands. Population, 66,461, census of 1920.

During the period under report, three cases of plague, with no resulting fatalities, were reported at Las Palmas. The cases occurred in persons vaccinated against plague. From September 1 to December 31, 1924, 2,261 persons in the port district were vaccinated against plague. During the same period, 178 rats were examined for plague. No plague-infected rat was found.

Sanitary conditions are considered not to be good. The municipality has recently commenced constructing sewers, but only a few houses situated on the principal streets are connected with this system.

Plague—Puerto de la Luz.—The only locality in the east Canary Islands stated to be recognized as plague infected is Puerto de la Luz, the principal harbor of the islands. This port is in close contact with the plague-infected ports of West Africa and it is visited by five or six thousand vessels a year. The coarse volcanic formation of the soil affords innumerable small tunnels and crevices in the rocks for rat harborage, and rat extermination would be extremely difficult.

CUBA

Communicable diseases—Provinces—November and December, 1924.—Cases of communicable diseases were notified in the provinces of Cuba for the months of November and December, 1924, as follows:

NOVEMBER, 1924

Disease	Pinar Del Rio	Habana	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cerebrospinal meningitis		1					1
Chicken pox		10					10
Diphtheria	2	9	2		2	3	18
Malaria	11	110	1	5	128	394	649
Measles		4		23			27
Paratyphoid	1		2	3			6
Poliomyelitis (infantile paralysis)							
Scarlet fever		4					4
Tetanus (infantile)			1				1
Typhoid fever	5	42	7	30	[illegible]	25	115

DECEMBER, 1924

Disease	Pinar Del Rio	Habana	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cerebrospinal meningitis			1				1
Chicken pox		3	1		2		6
Diphtheria		19	2	2		7	30
Malaria	15	107	4	8	80	336	550
Measles	2	9		6			17
Paratyphoid	1	3					4
Poliomyelitis (infantile paralysis)			2				2
Scarlet fever		3					3
Tetanus (infantile)			1				1
Typhoid fever	4	40	11	17	11	23	106

CZECHOSLOVAKIA

Communicable diseases—October–December, 1924.—During the period October–December, 1924, communicable diseases were reported in Czechoslovakia as follows:

Disease	Cases	Deaths	Province showing greatest number of cases and deaths
Anthrax	15		Russinia: Cases, 6.
Cerebrospinal meningitis	23	9	Bohemia: Cases, 10; deaths, 6.
Diphtheria	1,057	81	Bohemia: Cases, 514; deaths, 35.
Dysentery	635	55	Slovakia: Cases, 464; deaths, 35.
Malaria	10		Slovakia: Cases, 6.
Paratyphoid fever A	1		Bohemia.
Paratyphoid fever B	16		Bohemia. Cases, 12.
Scarlatina	3,570	112	Bohemia: Cases, 1,591; deaths, 35.
Trachoma	568		Slovakia: Cases, 225.
Typhoid fever	2,197	180	Slovakia: Cases, 1,010; deaths, 58.
Typhus fever	5		Russinia.

Rabies.—During the same period two deaths from rabies were reported in Czechoslovakia. The deaths occurred in the Province of Bohemia.

ECUADOR

Plague—Plague-infected rodents—February 16 to March 15, 1925.—Plague was reported in Ecuador from February 16 to March 15, 1925, as follows: Guayaquil, 28 cases, 13 deaths; Yaguachi, 1 case; Naranjito, 1 case. During this period, 90 plague-infected rats were found at Guayaquil out of 23,775 rats examined.

MADAGASCAR

Plague—January 16–31, 1925.—During the period January 16 to 31, 1925, 85 cases of plague with 70 deaths were reported in the Island of Madagascar, occurring in the Provinces of Moramanga (cases, 4; deaths, 4) and Tananarive (cases, 81; deaths, 66). The types were stated to be bubonic (54 cases), pneumonic (11 cases), septicemic (20 cases). No occurrence of the disease was reported at ports.

UNION OF SOUTH AFRICA

Plague—Further relative to outbreak in Boshof district, Transvaal[1]*—Infected rodents found.*—During the week ended February 14, 1925, 16 cases of plague with 5 deaths were reported in the Union of South Africa. Of these, 15 cases occurred in the Boshof District, Transvaal, 14 being in the white population and 1 case (native) in the Winburg District. The history of the outbreak in the Boshof District shows that the first case became infected January 25, 1925, while out on the veldt; the other cases, all relatives and living within a mile of each other, became infected while nursing and visiting the first patient during his illness. The house was heavily infested with fleas. Two plague-infected rodents are stated to have been found at Meyerville, adjoining Standerton Town Commonage.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended April 10, 1925 [2]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India:				
Calcutta	Feb. 8-14	26	26	

[1] Public Health Reports, Apr. 3, 1925, p. 683.
[2] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended April 10, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
St. Michaels	Jan. 18-24	3	1	
Ecuador:				
Guayaquil	Feb 16-Mar. 15	28	13	Rats taken, 23,775; found infected, 90.
Naranjito	do	1		
Yaguachi	do	1		
India:				
Bombay	Feb. 8-14	3	2	
Java:				
East Java—				
Soerabaya	Jan. 22-28	2	1	
Madagascar				Jan. 16-31, 1925: Cases, 85; deaths, 70. Bubonic, pneumonic, septicemic.
Province—				
Moramanga	Jan. 16-31	4	4	
Tananarive	do	81	66	
Siam.				
Bangkok	Feb. 8-14	1		
Straits Settlements.				
Singapore	Feb. 8-21	2	2	
Union of South Africa				Feb. 8-14, 1925 Cases, 16; deaths, 5. Of these, 14 in white population, with 5 deaths.
Transvaal—				
Boshof district	Feb. 8-14	15	5	On farms. White cases, 14; deaths, 5.
Winburg district	do	1		On farm. Native.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Feb. 11-28	1		
Arabia:				
Aden	Feb 22-28	4	1	Of these, 3 imported.
Brazil:				
Pernambuco	Jan. 18-Feb. 14	56	23	
Canada:				
Alberta—				
Calgary	Mar. 15-21	1		Stated to have been contracted in Ontario.
British Columbia—				
Ocean Falls	Mar. 7-20	3		Very mild.
Vancouver	Mar. 8-21	45		
China:				
Amoy	Feb. 15-21			Present. Feb. 22-28: One death.
Foochow	Feb 8-14			Present.
Hongkong	Jan. 18-Feb. 7	5	5	
Manchuria—				
Dairen	Jan. 19-Feb. 1	2		
Colombia:				
Buenaventura	Feb 22-28	1		
Dominican Republic:				
Puerta Plata	Mar. 8-14	1		
France:				
Dunkirk	Mar. 2-8	1		From vessel. In quarantine.
Great Britain:				
England and Wales	Mar. 1-14	259		
India:				
Bombay	Feb. 8-14	46	25	
Calcutta	Feb 8-14	225	133	
Karachi	Feb. 22-28	13	6	
Japan:				
Taiwan	Jan. 1-31	1		
Java:				
East Java—				
Soerabaya	Jan. 22-28	109	12	
Mexico:				
Guadalajara	Mar. 17-23		2	
Tampico	Mar. 11-20	7		
Vera Cruz	Mar. 16-22		1	
Poland	Dec. 21-28	1		
Portugal:				
Lisbon	Feb. 23-Mar. 14	19	5	
Oporto	Mar. 8-14	2		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended April 10, 1925—Continued

SMALLPOX—Continued.

Place	Date	Cases	Deaths	Remarks
Siam:				
Bangkok	Feb. 1-14	1	6	
Spain:				
Malaga	Mar. 8-14		4	
Syria:				
Aleppo	Feb. 22-28	8		
Tunis:				
Tunis	Mar. 12-18	19	28	
On vessel:				
S. S. Eldridge	Mar. 23	1		At Port Townsend, from Yokohama and ports.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Feb. 1-28	4	1	
Argentina:				
Rosario	Jan. 1-31		1	
Chile.				
Valparaiso	Feb 15-21		1	
Palestine:				
Tiberias	Feb. 24-Mar. 2	2		
Poland				Dec. 21-Jan. 3, 1925: Cases, 209; deaths, 24
Rumania:				
Constanza	Feb. 1-28	2		
Turkey.				
Constantinople	Feb. 22-28	1		

Reports Received from December 27, 1924, to April 3, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Dec. 27, 1924: Cases, 14; deaths, 13.
Colombo	Nov. 16-22	1		
Do	Jan. 11-24	2	2	
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 27,164; deaths, 16,228. Jan. 4-24, 1925: Cases, 7,941; deaths, 4,705.
Bombay	Nov. 23-Dec. 20	4	4	
Do	Jan. 18-24	1	1	
Calcutta	Oct. 26-Jan. 3	59	51	
Do	Jan. 4-Feb. 7	72	67	
Madras	Nov. 16-Jan. 3	69	40	
Do	Jan. 4-Feb. 21	131	92	
Rangoon	Nov. 9-Dec. 20	9	2	
Do	Jan. 4-31	6	4	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 14; deaths, 10.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug 1-Sept. 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov. 30-Dec. 6	1		
Siam				
Bangkok	Nov. 9-29	4	2	
Do	Jan 18-Feb. 7	5	2	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 2-Jan. 3	30	13	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 3, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Brazil:				
Bahia	Feb. 15-Jan. 10	3	3	
British East Africa:				
Tanganyika Territory	Nov. 23-Dec. 27	17	10	
Uganda	Aug.-Nov., 1924	242	211	
Canary Islands:				
Las Palmas	Jan. 21-23	2		Stated to be endemic.
Do	Feb. 4	1		Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec. 19	3	1	Vicinity of Santa Cruz de Teneriffe.
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-Jan. 3	12	9	
Do	Jan. 4-Feb. 18	8	10	Five plague rodents.
China:				
Foochow	Dec. 28-Jan. 3			Present.
Nanking	Nov. 23-Jan. 31			Do.
Shing Hsien	October, 1924		790	
Ecuador:				
Chimborazo Province—				
Alausi District	Jan. 14		14	At two localities on Guayaquil and Quito Railway.
Guayaquil	Nov. 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92.
Do	Jan. 1-Feb. 15	31	12	Rats taken, 31,252, rats found infected, 144.
Yaguachi	Feb. 1-15	1	1	
Egypt				Year 1924: Cases, 373. Jan. 1-28, 1925: Cases, 15.
City—				
Alexandria	Year 1924	2	2	Last case, Nov. 26.
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec. 7.
Suez	do	20	13	Last case, Dec. 20.
Province—				
Dakhalia	Jan. 1-8	1	1	
Kalioubiah	do	3		
Menoufieh	do	7	3	
Gold Coast				September-November, 1924: Deaths, 48.
Hawaii:				
Honokaa	Nov. 4	1		Plague-infected rodents found Dec. 9, 1924, and Jan. 15, 1925.
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 28,154, deaths, 21,505. Jan. 4-24, 1925. Cases, 12,364; deaths, 10,463.
Bombay	Nov. 22-Jan. 3	4	3	
Do	Jan. 4-17	2	2	
Calcutta	Jan. 18-24	1	1	
Karachi	Nov. 30-Dec. 6	2	1	
Do	Jan. 4-Feb. 21	12	11	
Madras Presidency	Nov. 23-Jan. 3	685	487	
Do	Jan. 4-24	658	511	
Rangoon	Oct. 26-Jan. 3	26	25	
Do	Jan. 4-Feb. 7	55	47	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 25; deaths, 20.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Saigon	Jan. 11-17	2	1	Including 100 square kilometers of surrounding territory.
Do	Dec. 25-31	1	1	Do.
Iraq	June 29-Dec. 13	18	13	
Japan	Aug. 10-Dec. 6	19		
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri; epidemic.
Pare	Nov. 29			Do.
Sidoardjo	Jan. 2			Declared epidemic, Province of Soerabaya.
Soerabaya	Nov. 16-Dec. 31	71	72	
Do	Jan. 15-21	1	1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 3, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Java—Continued				
West Java—				
Cheribon	Oct 14-Nov. 3		14	
Do	Nov 18-Dec. 22		80	
Do	Jan. 1-14		44	Cheribon Province.
Do	Jan. 30			Present.
Pasoeroean	Dec. 27			Province. Epidemic in one locality.
Pekalongan	Oct 14-Nov. 3		29	
Do	Nov 18-Dec. 31		177	
Do	Jan. 1-14		81	Pekalongan Province.
Probalingga	Dec. 27			Province. Epidemic.
Tegal	Oct 14-Dec. 31		26	
Do	Jan 1-14		37	Pekalongan Province.
Madagascar				
Fort Dauphin (port)	Nov. 1-Dec 15	12	5	
Itasy Province				Nov 1-Dec. 15, 1924. Cases, 4; deaths, 2
Majunga (port)	Nov. 1-30	1	1	
Moramanga Province				Nov 1-Dec 15, 1924: Cases, 49; deaths, 34
Tamatave (port)	Nov. 1-30	1	1	
Tananarive Province				Oct 16-Dec. 31, 1924. Cases, 298; deaths, 274
Do				Jan 1-15 Cases, 54, deaths, 48.
Tananarive (town)	Oct. 16-Nov. 30	8	7	Bubonic, pneumonic, septicemic
Do	Dec. 16-31	4	4	
Do	Jan. 1-15	1	1	
Mauritius Island				Sept 7-Oct. 18, 1924. Cases, 60, deaths, 53.
Morocco.				
Marrakech				Feb. 9, 1925 Present in native quarter of town. Stated to be pneumonic in form and of high mortality.
Nigeria				August-November, 1924. Cases, 387, deaths, 317.
Peru	February, 1925	6	6	
Siam:				
Bangkok	Dec 28-Jan. 3	1	1	
Do	Jan. 25-31	1	1	
Siberia:				
Transbaikalia—				
Turga	October, 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Do	Jan. 4-17	3	2	
Do	Jan. 25-31	3	2	
Syria:				
Beirut	Jan. 11-20	1		
Turkey:				
Constantinople	Jan 9-15	5	5	
Union of South Africa	Jan. 4-Feb. 7	24	10	Native cases, 3; deaths, 1; white, 2 cases, 1 death
Cape Province—				
De Aar District	Nov 22-Jan. 3	4	1	Native
Do	Jan. 4-10		2	Natives, on farms
Do	Jan. 25-31	1	1	Malay camp.
Dronfield	Dec. 7-13	1		8 miles from Kimberley.
Edenburg (town)	Jan. 25-31			Plague infected house mouse.
Kimberley	Dec. 7-27	3	2	
Do	Feb. 1-7	1	1	On farm
Maraisburg District	Nov. 22-Dec. 13	4	2	Bubonic, on Goedshoop Farm.
Orange Free State—				
Bloemfontein District	Dec. 21-Jan. 3	5	2	
Do	Jan. 11-17	1	1	Native; on farm.
Ficksburg District	Dec. 28-Jan 3	1	1	
Hoopstad District	Dec. 7-13	1		On farm.
Kroonstad District	Nov 22-Jan. 3	2	1	
Do	Jan 18-24	1	1	Native; on farm.
Philippolis District	Dec. 21-27	1		
Vredefort District	Dec. 7-20	2	2	On farms.
Steynsburg District	Jan. 4-10	1		Native; on farm.
Transvaal—				
Boshof District	Dec. 7-Jan. 3	3	3	On farm.
Do	Jan. 11-Feb. 7	13	4	Native, 4 cases; white, 1 fatal case. On farms.
Smithfield	Jan. 11-17	1		
Wodehouse District	Feb. 1-7	2	1	On farm.
Wolmaransstad District.	Nov. 22-29	1	1	On Farm Wolverspruit, Vaal River. Native.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from December 27, 1924, to April 3, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
On vessel:				
S. S. Conde				At Marseille, France, Nov. 8, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 31, 1924: Cases, 409. Jan. 1-20, 1925: Cases, 107.
Algiers	Jan 1-31	5		
Arabia:				
Aden	Jan. 25-Feb. 21	5		Imported.
Bolivia:				
La Paz	Nov. 1-Dec. 31	20	11	
Do	Jan. 1-31		5	
Brazil:				
Pernambuco	Nov. 9-Jan. 3	100	27	
Do	Jan. 4-17	22	12	
British East Africa:				
Kenya—				
Mombasa	Jan. 18-24	1		
Uganda—				
Entebbe	Oct 1-31	4		
British South Africa:				
Northern Rhodesia	Oct 28-Dec 15	57	2	
Do	Jan. 27-Feb. 2	3		Natives
Southern Rhodesia	Jan. 29-Feb. 4	1		
Canada:				
British Columbia—				
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-Mar. 7	223		
Victoria	Jan. 18-Feb. 7	2		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-Feb. 27	30		
New Brunswick—				
Bonaventure and Gaspe Counties.	Jan. 1-31	1		
Northumberland	Feb. 8-14	1		County.
Ontario				Nov. 30-Dec 27, 1924: Cases, 33. Dec. 28, 1924, to Feb. 28, 1925: Cases, 41; deaths, 1.
Hamilton	Jan 24-30	1		
Ceylon				July 27-Nov. 29, 1924: Cases, 27; deaths, 1.
Colombo	Jan. 18-Feb. 7	4		
China.				
Amoy	Nov. 9-Feb. 14			Present.
Antung	Nov 17-Dec. 28	5		
Do	Jan. 5-Feb 14	15	1	
Foochow	Nov. 2-Jan. 27			Do.
Hongkong	Nov. 9-Jan. 3	6	2	
Do	Jan. 4-17	4	2	
Manchuria—				
Harbin	Jan. 15-Feb. 11	5		
Nanking	Jan. 4-21			Do.
Shanghai	Dec. 7-27	1	2	
Do	Jan. 18-24	1		
Do	Feb. 1-14	3	4	Deaths among Chinese.
Chosen:				
Seoul	Dec. 1-31	1		
Colombia:				
Buenaventura	Feb. 15-22	1		
Czechoslovakia				April-June, 1924: Cases, 1; occurring in Province of Moravia.
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 31	10		
Do	Jan. 8-28	8		
Esthonia				Dec. 1-31, 1924: Cases, 2.
France				July-December, 1924: Cases, 81;
St. Malo	Feb. 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 3, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Germany				June 29–Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1-10	1		
Gibraltar	Dec. 8-14	1		
Gold Coast				July-September, 1924: Cases, 82; deaths, 1.
Great Britain:				
England and Wales	Nov. 23–Jan. 3	472		
Do	Jan. 4–Feb. 28	1,085		
Newcastle-on-Tyne	Jan. 18–Feb. 21	9		
Do	Mar. 1-7	1		
Greece				January–June, 1924. Cases, 170; deaths, 27.
Do				July–December, 1924: Cases, 38; deaths, 26.
Saloniki	Nov. 11–Dec. 22	3		
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 12,564; deaths, 2,857. Jan. 4–24, 1925 Cases, 7,921; deaths, 1,642.
Bombay	Nov 2–Jan. 3	30	18	
Do	Jan. 4–Feb. 7	114	65	
Calcutta	Oct 26–Jan. 8	307	170	
Do	Jan. 4–Feb. 7	578	358	Mar. 5, 1925: Epidemic.
Karachi	Nov. 16–Jan. 3	16	2	
Do	Jan. 4–Feb. 14	52	6	
Madras	Nov. 16–Jan. 3	122	48	
Do	Jan. 4–Feb. 21	379	114	
Rangoon	Oct. 26–Jan. 3	86	28	
Do	Jan. 4–Feb. 7	287	49	
Indo-China				Aug. 1–Sept. 30, 1924· Cases, 223. deaths, 76.
Province—				
Anam	Aug. 1–Sept 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov 16–Jan. 3	17	5	Including 100 sq. km. of surrounding country.
Do	Jan 4-10	3	1	
Do	Jan. 25–31	5	2	Do.
Tonkin	Aug 1–Sept 30	19	7	
Iraq	June 29–Dec. 13	137	66	
Bagdad	Nov. 9–Dec 27	2	1	
Italy				June 29–Dec. 27, 1924: Cases, 63.
Jamaica				Nov. 30, 1924–Jan. 3, 1925 Cases, 50. Reported as alastrim.
Do				Jan 4–31, 1925. Cases, 43. Reported as alastrim.
Kingston	Nov 30–Dec. 27	4		Reported as alastrim.
Japan				Aug 1–Nov. 15, 1924. Cases, 4.
Nagasaki	Feb. 9–15	3		
Java:				
East Java—				
Pasoeroean	Oct 26–Nov. 1	9	1	
Do	Nov. 12–19			Epidemic in 2 native villages.
Soerabaya	Oct. 19–Dec. 31	685	212	
Do	Jan. 15–21	62	11	
West Java—				
Batam	Oct. 14–20	2		
Batavia	Oct. 21–Nov. 14	2		
Do	Dec. 20–Jan. 2	19	4	
Buitenzorg	Dec. 25–31	1		Batavia Residency.
Cheribon	Oct. 14–Nov. 24	15		Cheribon Residency.
Do	Jan. 1–7	2		
Pekalongan	Oct. 14–Nov. 24	22		
Do	Dec. 25–31	3		Province.
Pemalang	Jan. 8–14	1		Pekalongan Residency.
Preanger	Nov. 18–24	1		
Latvia				Oct. 1–Nov. 30, 1924: Cases, 5.
Lithuania				Jan. 1–31, 1925: Cases, 2.
Mexico				
Durango	Dec. 1–31		5	
Do	Jan. 1–Feb. 28		10	
Guadalajara	Dec. 23–29		1	
Do	Jan. 6–12		1	
Do	Mar. 3–9		1	
Mexico City	Nov 23–Dec. 27	5		
Do	Jan. 11–Feb. 14	9		
Monterey				Jan. 24, 1925: Outbreak. Mar. 14, 1925, present.
Salina Cruz	Dec. 1–31	1	1	
Saltillo	Feb. 22–28		1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 3, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico—Continued				
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-Mar. 10	44	16	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan. 5-Mar. 15		35	
Villa Hermosa	Dec. 28-Jan 10			Present. Locality, capital, State of Tabasco.
Nigeria				January-June, 1924: Cases, 357; deaths, 87.
Do				July-November, 1924: Cases, 87; deaths, 25.
Persia:				
Teheran				Sept. 23-Dec. 21, 1924: Deaths, 12.
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept. 21-Nov. 29, 1924: Cases, 19; deaths, 2.
Do				Nov. 30-Dec. 20, 1924: Cases, 10.
Portugal				
Lisbon	Dec. 7-Jan. 3	17		
Do	Jan. 4-Feb. 28	59	2	
Oporto	Nov. 30-Dec. 27	3	2	
Do	Jan. 11-17	1		
Russia				January-June, 1924: Cases, 9,083; July-September, 1924: Cases, 1,251.
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan. 18-31	4	6	
Sierra Leone:				
Freetown	Feb. 7-14	2		From S. S. Elmina.
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Cadiz	Nov. 1-Dec. 31		51	
Do	Jan. 1-31		9	
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-Mar. 7		77	
Valencia	Nov. 30-Dec. 6	2		
Do	Feb. 15-Mar. 7	3		
Switzerland:				
Lucerne	Nov. 1-Dec. 31	19		
Do	Jan. 1-31	24		
Syria:				
Aleppo	Nov. 23-Dec. 27	13		
Do	Jan 4-Feb. 21	63	18	
Damascus	Jan. 6-13	2		
Tripoli:				
Tripoli	July 14-Dec. 12	52		
Tunis:				
Tunis	Nov 25-Dec. 29	42	35	
Do	Jan 1-Mar. 11		199	
Turkey:				
Constantinople	Dec 13-19	5		
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 14.
Cape Province	Feb 1-7			Outbreaks.
De Aar District	Jan. 25-31			Outbreak at railway camp.
Do	Nov 9-Jan. 17			Outbreaks.
Orange Free State	Nov. 2-8			Do.
Ladybrand District	Jan 15-31			Outbreak, on farm.
Transvaal	Nov. 9-Jan. 10			Do.
Do	Feb. 1-7			Outbreaks
Uruguay				January-June, 1924: Cases, 101; deaths, 2.
Do				July-October, 1924: Cases, 45; deaths, 4.
On vessel:				
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St. Malo, France, from Sfax, Tunis, Feb., 1924; believed to have imported smallpox infection.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 3, 1925—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 101; deaths, 14.
Algiers	Nov. 1-Dec. 31	5	1	
Do	Jan. 1-Feb. 20	4	3	
Bolivia:				
La Paz	Nov. 1-Dec. 31	3		
Do	Jan. 1-31	2		
Bulgaria				January-June, 1924: Cases, 191; deaths, 28.
Do				July-October, 1924: Cases, 5.
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Do	Jan. 6-12		2	
Do	Jan. 27-Feb. 2		1	
Iquique	Nov. 25-Dec. 1		2	
Do	Feb. 1-7		1	
Talcahuano	Nov. 16-Dec. 20		5	
Do	Jan. 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-Feb. 14		9	
Chosen.				
Seoul	Nov. 1-30	1	1	
Czechoslovakia				December, 1924: Cases, 5.
Egypt:				
Alexandria	Dec. 3-9	1	1	
Cairo	Oct. 1-Dec. 23	13	8	
Esthonia				Dec. 1-31, 1924: Cases, 5.
France				July-October, 1924: Cases, 7.
Gold Coast				Oct. 1-31, 1924: 1 case.
Greece				May-June, 1924. Cases, 116; deaths, 8.
Do				July-December, 1924. Cases, 40; deaths, 4.
Saloniki	Nov 17-Dec. 15	3	2	
Do	Jan. 25-31	1		
Japan				Aug. 1-Nov. 15, 1924; Cases, 2.
Latvia				October-December, 1924: Cases, 30.
Lithuania				August-October, 1924: Cases, 15; deaths, 1.
Do				Jan. 1-31, 1925: Cases, 27; deaths, 2.
Mexico:				
Durango	Dec 1-31		1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District.
Do	Jan. 11-Feb. 14	40		Do.
San Luis Potosi	Mar. 8-14		1	
Morocco				November, 1924: Cases, 5.
Palestine				Nov. 12-Dec. 8, 1924: Cases, 7.
Ekron	Dec. 23-29	1		
Jerusalem	do	2		
Do	Jan. 20-26	1		
Mikveh Israel	do	1		
Ramleh	Feb. 10-16	1		
Peru				
Arequipa	Nov. 24-30		1	
Poland				Sept. 28-Dec. 20, 1924: Cases, 542; deaths, 33.
Portugal.				
Lisbon	Dec. 29-Jan. 4		2	
Oporto	Jan. 4-Feb. 7	2		
Rumania				January-June, 1924: Cases, 2,906; deaths, 328.
Do				July-August, 1924: Cases, 89; deaths, 12.
Constanza	Dec. 1-10	1		
Russia				Jan. 1-June 30, 1924: Cases, 92,000. July-September, 1924: Cases, 5,225.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Sweden:				
Goteborg	Jan. 18-24	1		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Tunis	Mar. 5-11	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 3, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Turkey:				
Constantinople	Nov 15-Dec 19	6	1	
Do	Jan 2-22	6		
Do	Feb. 1-7	1	1	
Union of South Africa				Nov 1-Dec 31, 1924. Cases, 345; deaths, 87
Cape Province	Nov. 1-Dec. 31	126	24	Dec. 21, 1924-Jan. 17, 1925: Outbreaks.
Do	Feb. 1-7			Outbreaks.
East London	Nov. 16-22	1		
Do	Jan. 18-24	1		
Natal	Nov. 1-Dec 31	130	50	
Do	Jan. 18-24			Do.
Orange Free State	Nov 1-Dec. 31	59	8	Jan. 11-17. Outbreaks
Transvaal	do	30	5	
Yugoslavia				Aug 3-Oct 18, 1924: Cases, 17; deaths, 2
Belgrade	Nov. 24-Dec 28	5		

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Gold Coast	October-November, 1924	4	4	
Salvador:				
San Salvador	June-October, 1924	77	28	Last case, Oct 22, 1924.

TREASURY DEPARTMENT

PUBLIC HEALTH REPORTS

ISSUED WEEKLY

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SPECIAL ARTICLES

Current World Prevalence of Disease
Methods of Sampling Aerial Dust
Highway Signs Show Approved Water Supply

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UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

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V

CONTENTS

PUBLIC HEALTH REPORTS

VOL. 40 APRIL 17, 1925 NO. 16

CURRENT WORLD PREVALENCE OF DISEASE

REVIEW OF THE MONTHLY EPIDEMIOLOGICAL REPORT FOR FEBRUARY 15, 1925, ISSUED BY THE HEALTH SECTION OF THE LEAGUE OF NATIONS' SECRETARIAT [1]

Continued freedom from unusual epidemic conditions in all parts of the world is indicated by the data made available in the Monthly Epidemiological Report issued February 15 at Geneva by the Health Section of the League of Nations' Secretariat. For only a few countries does the information include the month of January; the reports from these, however, indicate a decided upward trend in the prevalence of influenza. In the English cities the number of deaths increased more rapidly than during the preceding months; London and Manchester reported the greatest number of deaths. German cities also showed a definite though less rapid rise in the number of deaths from influenza and pneumonia. Press dispatches have indicated that in most of western Europe influenza of a mild type has been prevalent.

In the United States influenza has been prevalent in only a few localities, chiefly in the Southern States. An increase in the number of cases in several States became apparent in January and seems to have passed its maximum by the end of February. The States affected include Georgia, Alabama, Mississippi, Oklahoma, Arkansas, and Texas.[2]

Epidemic hiccough.—An outbreak of epidemic hiccough is reported from Denmark, with 344 cases in December; 66 cases were notified in November, 2 in October, and 1 in September. "Its appearance coincided with a rise in the reports of influenza," states the report, "and was accompanied by a number of cases of lethargic encephalitis, as shown by the data for the city of Copenhagen."

Cases of epidemic hiccough, lethargic encephalitis, and influenza notified in Copenhagen, Denmark

Four weeks ended—	Epidemic hiccough	Lethargic encephalitis	Influenza
Nov. 22	18	0	437
Dec. 20	127	3	1,155
Jan. 31	18	5	774

[1] From the Statistical Office, United States Public Health Service.
[2] Public Health Reports.

The age and sex distribution of the cases of epidemic hiccough was as follows: Children under 15 years, 8 cases; males aged 15 to 64 years, 132 cases; males over 65, 11 cases; females, 12 cases.

An outbreak of epidemic hiccough is noted also in Switzerland, where 47 cases were reported during January.

Lethargic encephalitis.—A slight increase in the number of cases of lethargic encephalitis is noted in the December reports of several European countries and in the January reports of Belgium and England and Wales. In England and Wales, where for the three preceding four-week periods the reported number of cases had been from 172 to 174, the number rose to 194 for the four weeks ended January 31.

The number of cases of lethargic encephalitis notified in the United States has been on the increase for several months, as shown below:

Cases of lethargic encephalitis notified in 27 States of the United States, October to January, 1923-24 and 1924-25

Four weeks ended—	1923-24	1924-25
Nov. 1	41	42
Nov 29	38	54
Dec. 27	26	81
Jan. 24	48	107

Plague.—Reports on plague received at Geneva for December indicate a distinct increase in cases in India, especially in the Punjab and the Upper Ganges Valley, but the prevalence in the south of India, notably in Hyderabad, has diminished.

Deaths from plague in certain provinces of India

Four-week period—	Total	Punjab	United Provinces	Central Provinces	Madras Presidency	Hyderabad State	Bombay Presidency
1924							
Oct. 26–Nov 22	7,557	901	483	775	260	3,222	830
Nov. 23–Dec. 20	8,420	1,704	1,425	747	499	2,243	701
1923							
Nov. 25–Dec 22	*9,988*	*1,281*	*1,382*	*996*	*787*	*666*	*1,917*

In Java, plague is more prevalent than it was during the preceding two years; 986 deaths were reported in the two weeks ended November 24. Cheribon and Samarang are the only ports infected; nearly all cases occurred in the central provinces.

Other Asiatic localities reporting a few plague cases included Siam, Indo-China, Singapore, Ceylon, and Bagdad.

Plague reports from the various endemic areas of Africa show that the disease is most prevalent in Madagascar, particularly Tananarive

Province. Of 165 cases reported from Madagascar for December, 120 were in the Province of Tananarive.

Cases of plague continued to be reported from the Union of South Africa—21 in January as compared with 16 in December and 24 in November. Several districts free from plague last year were said to be infected at the time of the reports.

A fresh outbreak at Coumassie in the Gold Coast, where plague incidence had declined considerably during October and November, resulted in 14 cases and 12 deaths from December 3 to 18, 1924.

Ports in the Mediterranean area have been particularly free from plague. Although 12 cases were notified in Egypt from January 1 to 22, all were in the interior provinces. No cases occurred in Suez from December 20 to January 22, and none in Port Said or Alexandria since the first week in December. No cases have been reported from Greece for November or December. At Constantinople, 5 cases of pneumonic plague, all in one family, occurred between December 29 and January 11. No other Mediterranean port reported a case of plague in the period between the issuance of the January and February Epidemiological Reports.

The Public Health Reports for March 6 reported an outbreak of plague in Shansi Province, China. In October, 1924, 790 deaths were reported, mostly from bubonic plague, though a few cases of the pneumonic type were said to have been observed.

In the same month (October) 3 cases were reported as occurring at Turga, a village on the Chita railway, halfway between Borzia and Chita in Transbaikalia.

Cholera.—The cholera incidence in India rapidly declined in December in the provinces of the Upper and Middle Ganges Valley, but a sharp increase occurred in Bengal and Madras Presidency, so that the total for the latest four weeks available, November 23 to December 20, 1924, shows a slight increase over the previous four-week period.

Very few cases of cholera were reported from Ceylon, Indo-China, and Siam.

Typhus fever.—Typhus fever is less prevalent than during last winter in the countries of east and east-central Europe, but some cases were reported in December in Lithuania, Esthonia, Czechoslovakia, Greece, and Leningrad (report for Russia not yet available). Poland has had a more marked seasonal increase in cases, but the number is much less than in 1923.

An outbreak of typhus among natives in Natal, Union of South Africa, caused 233 cases in November; nevertheless, the incidence is lower than in the preceding two years. In Basutoland also the incidence is lower than for the preceding two years. In northern Africa, Algeria, and Tunis have had fewer cases of typhus than a year ago.

Smallpox.—"Less than 50 cases of smallpox were notified in December from the whole European Continent, excluding Russia, Spain, and Portugal, for which countries data were not available," states the Report. On the other hand, further increases occurred in the prevalence of smallpox in England, where 416 cases were reported in the four weeks ended January 24 as compared with 285 cases during the preceding four weeks. The disease continues to be of an exceedingly mild type, and no deaths have been reported in the cities.

The incidence of smallpox has been about 50 per 10-day period in Algeria and 45 in Tunis from November, when it began increasing, up to January 20. The cases in Nigeria rose from 4 in October to 77 in November. Other countries in Africa have reported few cases.

Smallpox continued to increase in the United States, where, in 27 States, 3,103 cases were notified in the four weeks ended December 27, as compared with 2,101 cases during the preceding four weeks, and 2,459 cases during the corresponding period of 1923.

Smallpox is prevalent also in Canada and Mexico, but no cases are reported from the West Indies.

In Java, where a rather severe outbreak occurred late last summer, reaching its maximum in September, the number of cases steadily declined in October and November.

Smallpox in Java and Madura, September 2 to November 24, 1924

Four-week period ended—	Number of cases	Number of deaths
Sept. 29	1028	236
Oct 27	770	177
Nov. 24	596	119

Enteric fever.—"The seasonal maximum incidence of this group of diseases has now been passed throughout Europe," says the Report "and it is evident, from the complete records now available, that cases were more prevalent in 1924 than in 1923, except in Denmark Holland, and Switzerland, and than in 1922, except in Poland, Lithuania, and Russia."

Dysentery.—The Report points out a somewhat unusual seasonal curve for dysentery in several European countries, i e., a second maximum occurred in October several weeks after the decline from the high summer incidence had begun. This was very marked in Poland, Hungary, and Rumania, and clearly defined also in Czechoslovakia, the Kingdom of the Serbs, Croats, and Slovenes, Bulgaria, and Italy.

Scarlet fever.—Scarlet fever has not been unusually prevalent during the winter. In the Netherlands and Germany the incidence

has been higher than in the previous year, but January reports show a decline in both countries. The fall and winter increases in the disease seem to have reached a maximum in November or December in many countries.

Diphtheria.—Although diphtheria has been more prevalent in recent months than during the preceding winter in most European countries, no unusually severe epidemics have occurred.

In the United States, on the other hand, the incidence of diphtheria has steadily diminished since 1921, and the maximum for the present season seems to have been reached early last autumn.

Measles.—The incidence of measles has been low quite generally during the latter half of 1924. Serious outbreaks had occurred in many countries in the beginning of the year 1924 and in 1923. In the United States, whereas from 50,000 to 60,000 cases were reported monthly in 27 States in the first part of 1924, the same States reported only 4,530 cases in December, 1924.

Severe epidemics have been reported in some parts of Russia. In Leningrad, 657 deaths from measles occurred in the first 11 months of 1924.

Tuberculosis.—A summary of mortality from tuberculosis by months in 1923 and 1924 is given in the Report for the German cities, and for London, Vienna, Budapest, Prague, Paris, and Madrid.

A very marked and rapid decline in the number of deaths from tuberculosis (all forms) in the 46 German cities is indicated. An upward trend in the disease, with wide seasonal fluctuations, was shown for 1921 and 1922; the maximum occurred in the four weeks from February 24 to March 22, when 2,918 deaths were reported. Since then the decline has been very rapid, the increase in the winter of 1923–24 was relatively slight, and the low level of 1,336 deaths was reached in the period September 7 to October 4. Since that time there has been a very slight seasonal increase.

STUDIES ON THE INDUSTRIAL DUST PROBLEM

II. A REVIEW OF THE METHODS USED FOR SAMPLING AERIAL DUST

By Leonard Greenburg, Associate Sanitary Engineer, United States Public Health Service, Office of Industrial Hygiene and Sanitation

In view of the injurious effects produced by the inhalation of certain dusts, as reviewed by the writer in an earlier paper (1), and of the quantitative relation between dust inhalation and disease, it seems evident that a knowledge of the dust content of the atmosphere is a matter of considerable importance. Such evidence is needed, first of all, in order to estimate the extent of the hazard involved in various industrial processes, and, second, in order to measure the efficiency of various protective devices which may be introduced for the mitigation of the dust hazard.

THE IMPORTANCE OF ANALYTICAL KNOWLEDGE CONCERNING THE SIZE OF DUST PARTICLES PRESENT IN THE ATMOSPHERE

In a series of very valuable and interesting communications the South African workers have shown that practically all of the dust particles in the lungs examined by them are under 10 microns in longest dimension. McCrae (2) digested silicotic lung tissue and examined the residue microscopically. Regarding the size distribution of particles, he says:

The great majority of particles were found to be of indefinite shape and to have a diameter less than 1 μ (that is, a diameter less than one-eighth of that of a red blood corpuscle); the amount of material with diameter less than 1 μ was very approximately 70 per cent of the whole. No attempt was made to measure diameters less than 1 μ. Many measurements were made of the particles constituting the remaining 30 per cent of the material; the longest diameters of these particles varied between 1 μ and 8.5 μ. In an extensive survey of several microscope preparations, only a negligibly small number of particles was seen whose longest diameter exceeded 8.5 μ, and the very longest observed was 10.5 μ.

The examination of silica particles isolated from this lung tissue (case No. 5) and the examination of silica particles *in situ* in lung tissue from several cases agree in leading to the conclusion that the largest particles which gain access to, and become embedded in, the lung proper have a maximum diameter of about 10 μ (= about 1/2,500 inch); but few having a larger diameter (and these up to only 12 μ) have been found in the lung.

Dr. Watkins-Pitchford (3) examined the silica particles in stained sections from seven silicotic lungs. He obtained results which correspond in the main with those of McCrae. He found the size distribution of 100 such particles to be as follows:

Size	Number
1–4 microns	14
4–6 microns	39
6–8 microns	29
8–10 microns	12
10–13 microns	6

Moir (4) examined 120 particles obtained from two specimens of lung, measured them by means of a micrometer, and found the following:

	microns
15 particles less than	1/8
16 particles about	1/2
12 particles about	3/4
30 particles about	1
15 particles about	1 1/3
13 particles about	2 2/3
11 particles about	2 1/4
3 particles about	2 3/4
3 particles about	3 1/3
1 particle about	4
1 particle about	5 1/2

As a result of this series of studies it is agreed by most of the workers in this field that in so far as hard rock dust is concerned particles over

10 microns in longest dimension are of negligible importance, and this same reasoning is assumed by many to apply to all types of dust.

Deciding on the lower size limit of the potentially dangerous particles is a matter of much greater difficulty, and one in which no such clear-cut results are possible. Obviously the size of the smallest visible particle will depend on the magnification used, the refractive properties of the dust, and in some degree on the visual acuity of the observer. The point in which we are interested as public health workers is the differentiation in dust content between the ordinary normal atmosphere and the air of dusty factory workrooms such as we know (from statistical studies) to be dangerous to health. This difference is sharply marked so far as the dust particles between approximately ½ and 10 microns in diameter are concerned; but the difference between such normal and abnormal air is masked and lost when we include in our determination the particles of ultramicroscopic size which are present in vast numbers in all air. These very minute particles can be estimated by such optical devices as the koniscope and the dust counter introduced by Aitken. Macfadyen and Lunt (5), for example, by the use of the Aitken dust counter, report 9,000,000 dust particles per cubic foot in ordinary indoor air. Such results as this tend only to mask the really significant differences which distinguish the normal atmosphere from the air of dusty industrial establishments.

If these conclusions are correct, the desideratum is a method which will reveal the number of dust particles of a diameter between 10 microns and ½ micron. A knowledge of the weight of dust present is valuable but much less important than a knowledge of the number of dust particles, since one very large particle is probably less injurious than a large number of smaller ones having the same weight.

REQUIREMENTS OF THE IDEAL DUST SAMPLING INSTRUMENT

It is to be understood that our interest in this problem is in its industrial aspects; and the discussion which follows has been drawn up from this view point only. It is essential that the ideal instrument be capable of efficiently sampling the dusty atmosphere with particular reference to particles of a size from ½ micron to 10 microns, and it should be possible, once this sample is obtained, to make counts of the number of such small particles present; for, from the hygienic standpoint, the count is the best index of the extent of the atmospheric pollution. It is also of much value to have knowledge of the weight of the dust; but because of the fact that it is practically impossible to separate the particles less than 10 microns in size from those over 10 microns in size, and thus obtain the weight of the injurious particles (those capable of gaining access to the

lung tissue), and also because one large particle may weigh many hundreds of times more than a smaller one, the weight of a given sample of dust must be used only as an additional guide in the interpretation of results, and then with some degree of caution.

The range in dust concentration over which one may be called upon to make determinations is very great. Some atmospheres, such as those prevailing outdoors after rainstorms, contain very small quantities of dust, whereas the air of mines or abrasive factories is often very highly polluted. For this reason our instrument must be capable of sampling both high and low dust concentrations with equal efficiency. This imposes a very exacting requirement, for it means that the dust collecting medium (whether it be water, sugar, or an adhesive) shall not add greatly to the dust of the sampled air. In a word, the "control" or "blank" of the instrument must be low; and, furthermore, it must be uniform in dust content. In other words, a sample of the collecting medium must be so uniform that the analysis of a representative sample gives a true picture of the dust content of all of it used in a given series of tests.

Because of the fact that the dust concentration of air is ever varying, it is necessary, in order to obtain a true picture of the condition, that the instrument be capable of sampling large quantities of air. Only in this manner is a picture of average conditions directly secured. It is preferable of course, once the sample is obtained, that the analysis be as simple and rapid as possible. Obviously the more time consuming and the more complex the method of analysis, the less value it possesses. In most of the mines of the United States there is no source of electric power, and this imposes, on any instrument to be used for mine-dust sampling, the requirement that it be capable of being hand driven. And, too, the instrument must be light in weight and portable, and must be of such size that its introduction into a workroom in the vicinity of the workers will not interfere with their movements.

The final choice of an instrument for sampling dust depends, then, on its efficiency, on its small errors in analysis, on its portability and weight, and on the difficulty or ease with which the samples once obtained may be analyzed.

METHODS OF DUST SAMPLING

In general, it is possible to group the methods of dust sampling in classes according to the physical principle utilized by the sampling instrument. That this can not be an exact classification is obvious, as some instruments involve the use of more than one physical principle. The following are the chief methods used for sampling aerial dust: Condensation, filtration, washing, sedimentation, im-

pinging, electrostatic, resistance. A brief description of each of the instruments used in these methods follows.

CONDENSATION METHODS

In 1875, Coulier (6) showed that the dust in air could be rendered visible by reducing the pressure within the containing vessel, causing the moisture present in the air of the vessel to condense on the dust particles. He further showed that this might be prevented by filtration of the air through a layer of cotton wool. This principle has since been utilized by various investigators.

The Aiken koniscope, described by John Aiken in 1889 (7, 8), consists of a metal tube and a suction pump placed at right angles and joined by means of a connecting post. The metal tube is provided with a window at each end and a stopcock at the end distal to the point at which the pump is attached. The tube is lined with hygroscopic material.

In operation, the tube is held horizontally and the pump vertically, the observer looking though the window in the tube at the point where it and the pump meet. Air is drawn into the apparatus by means of the pump and then the stopcock is closed. The air which is now more or less saturated with moisture from the hygroscopic material in the tube is rarified by depressing the pump once again. This results in a lowering of the dew point, with the formation of a fog or cloud that is due to the condensation of the moisture on the dust present. The density of the cloud or fog is then compared with suitable standards and a qualitative estimate of the air dustiness is thus established.

The Aiken dust counter.—An improvement on the koniscope was devised by Aiken and described by him in Nature (9). Essentially it makes use of the same principle as the koniscope, but in this case an attempt is made to derive a count of the number of particles present in the air. The instrument in its earlier form was very large and by no means portable. It consisted of a receiver, an air pump, an air-measuring device, an illuminometer, and a gasometer. The air is drawn into the receiver by means of the gasometer. In passing into the receiver it is measured and mixed with a known quantity of dust-free air and saturated with water. The air is then rarified by means of the pump. The rain, which is produced by the condensation of water on the dust present, falls on the ruled polished silver plate constituting the bottom of the receiver. The number of droplets on the counting plate multiplied by the proper factors for the amount of air sampled and the dilution with dust-free air give a count of the number of particles present in the original sample. This apparatus obviously presents the disadvantage of being very large and not portable. In addition, manipulation is rather intricate and liable to large experimental and personal error.

A modified form of Aiken dust counter was devised in an attempt to overcome some of the drawbacks of the previously described form. In this modified form (10) the receiver consists of a hollow box with a ruled glass bottom and a plain glass top, and is supported on two cylinders which open into it. One of these cylinders forms an air pump and contains the piston; the other cylinder is provided with three taps (stopcocks), the bores of which are of known volume. In the cylinder below these three taps is placed a plug of cotton wool, the lower end of the cylinder being perforated so that air may enter. A mirror is supported beneath the receiver and above it is placed a magnifying lens. Inside the receiver, strips of damp blotting paper serve the purpose of saturating the air with moisture. By drawing down the piston when the stopcocks communicate with the cotton-wool chamber, filtered air is drawn into the receiver. One of the taps (depending on the dustiness of the air to be sampled) is then turned at right angles, and so communicates with the outside air; it is then turned back again and the piston drawn down, thus bringing the sample of dusty air properly diluted with dust-free air into the receiver where the dust is precipitated along with moisture in the form of droplets on the ruled glass plate. These drops on the ruled glass plate are then counted. The multiplication of the count by such appropriate factors as the volume of air sampled gives a final figure for the number of particles of dust present in the original sample. This instrument is portable, being arranged on a tripod for field use.

The disadvantages of this instrument are the same as those enumerated above for the other instruments of this group. The amount of air sampled is very small and the opportunities for personal and experimental error are many. The most serious drawback, however, is that all particles of dust receive equal significance irrespective of size, since this method takes account of particles of an ultramicroscopic size. This is clearly borne out by the results obtained by Aiken. He found, for instance, that the number of particles per cubic inch in country air varied from 8,000 to 100,000, whereas in towns it varied from 1,000,000 to 50,000,000. The following counts obtained by Doctor Cohen (10) with this instrument bring out this point clearly and confirm the findings of Aiken.

	Number of particles per cubic inch
Place where air sample was taken —	
Woodhouse Moor, northwest wind	530,000
Tennis Court, Yorkshire College	852,000
Town Hall Square, Leeds	1,228,000
Paris churchyard, Leeds	3,638,000
Glasgow Town, northwest wind (Aiken)	3,736,000
Flour mill, Leeds	3,113,000

It will be noted that according to the above table the air of the Leeds flour mill contains less dust than the outdoor air of the Paris churchyard. This is without doubt fallacious and due probably to coalescence and aggregation of many of the dust particles in the case of the flour-mill dust.

The Hill diffractoscope described by Hill, in 1917 (11), is essentially the same as the Aiken koniscope. The results are only qualitative, giving a rough estimate of the dust present by the observation of the intensity of a beam of light when it is directed into the window of the rarified air chamber (Tyndall effect).

A late adaptation of the principle of condensation is utilized in the device of Owens (12, 13, 14). The sequence of operations in using this device has been summarized by the author (14) as follows:

> A high velocity jet of air is caused to strike a microscope cover glass; the effect of this high velocity is to bring about a fall of pressure in the jet, accompanying which, and resulting from it, is a corresponding fall of temperature. This in turn causes a condensation of the moisture in the air upon the dust particles, which are thus projected wet against the cover glass, and, as the water evaporates, are left behind adhering to the glass.

In this apparatus the air is moistened by being passed through a chamber lined with moist blotting paper and then is drawn at high velocity through a slot about 1 centimeter in length and 0.1 millimeter in width. After passing through this slot the air suffers a loss of heat and the moisture present condenses on the dust particles which are left on the microscope cover slip forming the top of the cells. The cover slip is then placed under the microscope and the particles are counted.

In summarizing the value of the instuments designed to utilize the principles of condensation of moisture on dust particles we may say that, judged from the point of view of the industrial hygienist, those instruments which permit us only to arrive at a qualitative estimate of the quantity of dust present have little practical value. The instruments of this type which permit of the derivation of a count of particles give results of limited significance, due to errors in sampling and analysis, and also due to the fact that they lead to counts which it is practically impossible to interpret, because particles of ultramicroscopic size which do not, so far as is known, constitute a health hazard, are grouped with those of a significant size from the hygienic point of view. Dr. Owen's apparatus yields high counts in normal indoor air. In very dusty atmosphere, however, the ribbon of dust on the microscope cover slip is so dense that counting the particles, even with high magnification, is difficult and often impossible. Dr. Owens has clearly demonstrated the utility and value of this apparatus for the outdoor conditions for which it was designed.

FILTRATION METHODS

The principle of filtration has been applied to the problem of dust sampling in more variable forms than any other. It seems necessary merely to mention many of these methods, for they present, for the most part, but small variations from each other. In general, the air is filtered through cotton wool, cloth, paper, or a soluble chemical compound, and the analysis made either by comparison with qualitative standards, by weighing, by counting the dust particles, and, lastly, in some cases by both weighing and counting the dust.

Earlier in this paper it was pointed out that Coulier (6) had shown that when air is filtered through a layer of cotton wool it loses its property of producing a Tyndall effect. This experiment indicated that the cotton wool removed the dust from the air, and it would appear, therefore, that such a filter might possess a high efficiency in dust removal.

This method has been used by a number of investigators, Arens (15), Cohen (16), Harcourt (17), Duckering (18), Cohen and Ruston (19), and Ditman (20). It yields only the weight of the dust in the air and, while it is a very valuable method for the estimation of toxic dusts (e. g., lead or arsenic), it is of limited value from the point of view of the production of pneumoconiosis. That these are certain additional drawbacks to this method may be realized from a consideration of one of the most intensive studies of it. Such a study is that of Duckering, previously referred to (18), and may be described as follows:

The important part of the apparatus, that is, the dust-filtering device, consists of a glass weighing bottle provided with inlet and outlet tubes; the inlet tube terminates in an inverted thistle funnel which is filled with cotton wool, the constriction in the lower part of the funnel holding the cotton wool in place. In order to prevent the loss of the cotton wool to any extent, the thistle funnel is covered with a piece of silk which is fastened in place by means of thread tied about the funnel. Duckering made use of three of these bottles in series, aspirating the dust-laden air through them by means of a suitable pump and measuring the quantity of air passed by means of a meter. The method gave results which differed by 0.5 to 0.9 grams, from a weighed control quantity of dust supplied from a Woulff bottle. It was, however, found necessary to resort to a very careful and highly elaborate method of drying the sampling bottles both before and after sampling the atmosphere. This was done by placing the bottles in an oven and drawing dry, dust-free air through them. Concerning this the author says:

It was found necessary to insure absolutely that there was no leakage in the apparatus when drying, the admission of even a small amount of undried and unfiltered air causing variable results.

The methods of drying necessary for use with this instrument, and the fact that the author was able only to secure results which checked by 0.5 and 0.9 grams, respectively, are vital objections to its use.

The methods of the second group involving the principle of filtration utilize cloth in place of cotton wool. Stacy used cheese cloth squares, which were weighed before the dust was sampled and again after sampling, the difference being considered the weight of the dust caught. Hill (21) used weighed cloth filter bags, which were placed in a conical metal holder and connected to an anemometer for measuring the volume of air sampled. The difference in weight before and after sampling was considered to represent the amount of dust in the quantity of air filtered. Hill found that this method was cumbersome, inaccurate, and required too much time for the making of a single determination. An apparatus similar in principle to that of the above-described bag method is the type known as the American automatic dust filter (22). Here the air is filtered through a series of four or more specially woven cloth bags contained in a closed cabinet. The difference in the weight of bags before and after passage of the air gives the weight of the dust in the volume of air passed through the instrument. The deficiencies of this instrument are similar to those of the Hill bag method previously described. The Carrier dry filter apparatus (23) attempts to keep the filter bags dry during the sampling period by heating the air by means of an electric heating unit before it passes into the filtration bags. The introduction of heating units in the air circuit prior to the filtering medium must greatly increase the possibility of experimental error due to the fact that some dust is caught and retained by the drying units. Because of the high temperature involved, Dunn (24) used bags made of asbestos for filtering the dust from flue gas.

Todd (25) utilized disks of Canton flannel, which were held in a special device, the air being filtered through the cloth and the dust being retained thereon. After the completion of sampling, the disk was compared with a series of standard disks ranging by degrees from 1 to 10 of a rather arbitrary scale.

In connection with all of the above-described methods one must bear in mind the possibility of a large experimental error being introduced in the procedure of bringing to constant dry weight a relatively large filtering cloth. In many cases in which the total quantity of dust is not great, this error must seriously invalidate any results obtained. The use of this method in cases where only qualitative results are obtained is open to several objections. The results of analyses by two different methods can not be correlated, for they are highly arbitrary and, secondly, analysis with any one instrument yields results which can not be interpreted in terms of possible health

hazard. It is, however, possible with some of the above-described methods roughly to graduate or classify various atmospheres in groups based on the amount of dust present; but even here serious error from the hygienic point of view is involved, for an atmosphere of many small particles (capable of gaining access to the lung tissue) and, hence, of an injurious size, may give a lower scale reading than an atmosphere containing a smaller number of large particles which are of relatively lesser hygienic significance.

The Gooch crucible has been used with some degree of success in the sampling of atmospheric dust. This apparatus usually consists of an ordinary porcelain or a platinum Gooch crucible, in the bottom of which a mat of shredded, acid-treated asbestos is made. The crucible is carefully dried and weighed, placed in a suitable holding device, and a known quantity of air is drawn through it; then it is again dried and weighed. The difference in weight is taken to represent the weight of the dust in the quantity of air sampled. The filtration surface of a Gooch crucible is rather small and, with a mat of a thickness sufficient to retain the greater portion of the dust, the resistance to air flow is very high. These factors, taken together, make it possible to sample only a small quantity of air by means of the Gooch crucible.

In order to overcome the objections to the use of cloth filters and the Gooch crucible, several investigators have had recourse to the use of filter paper for sampling dust.

One of the earliest methods used for the determination of dust by a filtration process was that of Rubner. According to Kershaw, the device Rubner employed consisted of a holder in which was placed a piece of filter paper, the holder being connected by suitable tubing to a water jet pump. The volume of air drawn through the paper was measured by means of a gas meter in series with the pump and paper holder. The estimation of the dust was made by comparison of the filter paper with a standard scale. Renk employed for this comparison a mixture of a known amount of soot and oil, which, when used in a glass vessel of wedge-shaped design, gave a color scale of gradually increasing density.

In the Sargent dust determinator (26) a piece of filter paper is fastened between the flanges of a cylindrical aluminum box and its conical-shaped cover. An electric lamp in the bottom of the box serves to keep the filter paper dry. Air is drawn through the instrument and a measuring device in series. The difference in weight before and after filtration of the air is taken to represent the weight of the dust in the amount of air sampled.

Filter paper has been used by a number of other investigators; Moller (27), Hubendick (28), Johannsen (29), and Nesbitt (30). This method is now being used in Great Britain in studies conducted

by the Advisory Committee on Atmospheric Pollution (31, 32). In this case an automatic apparatus has been built by means of which three or four samples are taken each hour.

Paper thimbles.—Filter-paper thimbles have been used successfully in a number of dust investigations (33, 34, 35, 36, 37). The apparatus consists of a filter-paper thimble (similar to a Soxhlet thimble) and its holding device, a means by which the air is drawn through the thimble, and a meter for measuring the air. The thimble is dried in an oven and weighed before and after filtration, the difference in weight being taken to represent the amount of dust in the air sampled.

That good quality filter paper possesses a high efficiency as a filtering medium there is no doubt. It has been shown by Katz and Smith (38) that the efficiency of various grades of filter paper may range from 63 to 90 per cent when tested optically, using tobacco smoke as the test dust. Because of its small particle size, the use of tobacco smoke constitutes a very severe test of the filtering efficiency of a dust-sampling device, and it is generally accepted that good quality filter paper, shortly after its use has begun and its pores have been clogged to some extent with dust, has a filtering efficiency of 95 to 100 per cent. The chief drawback from the hygienic point of view is that a count of the number of particles can not be obtained by the use of filter paper or filter-paper thimbles. It is necessary also in using this method to exercise the utmost caution in the drying and handling of the filter paper so as to avoid the absorption of moisture, lest large errors be introduced in the weighing.

In an effort to overcome these objections many workers have made use of another type of filtration method. In this case the air is filtered through a soluble chemical compound. After sampling, the substance is dissolved and determination of the dust is made both by weight and count or by comparison with a scale of standards.

By the method of Hahn (described by Kershaw) (39) air is drawn through a filter composed of collodion wool, the quantity of air being measured by piston displacement. After a suitable amount of air has been sampled the collodion is dissolved in ether, and the solution is then compared with a series of standards of an arbitrary nature. Fritzsche, in 1898 (40), used a tube containing nitrocellulose in place of the collodion used by Hahn. The method of determination was, however, very similar in other respects.

The most successful method of this type, one utilizing granulated sugar for the purpose of filtering dust, was first employed by Frankland (41) and later by Soper (42), Baskerville and Winslow (43), Gray (44), Johnston (45), the Miners' Phthisis Prevention Committee of South Africa (46), Higgins, Lanza, Laney, and Rice (47), Boyd (48), Fieldner, Katz, and Longfellow (49). This method makes use

of a sampling tube, in which a weighed amount (100 grams in the later types) of clean granulated sugar is placed. The dusty air is drawn through the tube by means of a pump or other suitable device. After a sufficient quantity of air has been sampled (usually 15 cubic feet) the sugar tube is taken to the laboratory for analysis. The sugar is dissolved in hot water, and count and weight determinations are then made on the dust present.

This method has been studied in some detail by Fieldner and others (49), who found the efficiency of the sugar tube to be approximately 35 per cent when tested optically with tobacco smoke and about 87 per cent when tested gravimetrically with silica dust. These results would indicate a relatively high filtering efficiency. By this method it is possible to obtain both weight and count of the number of dust particles present in a given atmosphere. The method does possess one notable shortcoming, namely, the large and variable quantity of dust present originally in all samples of sugar. This method will be discussed in greater detail in a subsequent paper.

WASHING METHODS

Washing methods have been applied to the sampling of dust with much success. These methods consist, in general, in bubbling the air through water, in this manner wetting the dust and bringing it into suspension. An estimate of the amount of dust present may then be made both by weight and count.

Tissandier, in 1874 (50), used Leibig bulbs filled with distilled water through which the air was bubbled. Tooms similarly used a washing method (described by Penderick) (51). Dreschel wash bottles were used for this purpose by Hill (11). In a later contribution (52) Hill and one of his coworkers point out the fact that this method of air sampling did not catch the finer particles of dust. This was found to be the case even when three such wash bottles were used in series.

In 1914 Osborne (53) used a washing method for the determination of the dust in the exhaust stacks of the Barren Island Garbage Disposal Works. The method consists in filtering a measured amount of air through fine mesh wire cloth and then in washing the air by bubbling it through water. The wash bottles were of special construction and consisted of two perforated, curved baffle plates placed one above the other and sealed in place on the inlet tube of the bottles, the inlet tube terminating in a perforated spherical bulb. The wash bottles were filled with water to a point above the baffles.

The Palmer dust apparatus was devised in 1916 by G. T. Palmer, in charge of investigations for the New York State Commission on Ventilation (54). This apparatus consists of a pear-shaped glass bulb, at the base of which is a water trap so arranged that the air is drawn through the trap (preferably at a rate of 4 or 5 cubic feet per

minute), in this manner breaking the water up into a spray which washes the dust from the air. After a suitable quantity of air has been sampled, depending on its dustiness, the water is drained from the trap and taken to the laboratory for analysis. By this method both a weight and count determination of the dust may be made.

By the method of Meyer (55) a sample of air approximately 100 cubic centimeters is drawn into a thoroughly washed Luer syringe (160 cubic centimeters capacity) containing 20 cubic centimeters of dust-free distilled water. The water is thoroughly agitated so as to wet the dust. One drop of this suspension is placed on a Levy blood-counting cell and a count of the dust particles is made. With this method only a count of the number of particles may be obtained. It would seem reasonable to suppose (owing to the small amount of air sampled, and also to the difficulty of wetting the smaller dust particles by such a method, coupled with the necessary laboratory procedure on such a small quantity of dust) that this method of dust sampling and analysis probably gives results which are, to say the least, somewhat erroneous.

Recently a dust-sampling apparatus was designed by T. A. Read, of the Broken Hill South Limited Mine in South Africa (56). It consists of a cylindrical chamber provided with a circular baffle, fitted at the lower end with an air-inlet tube, and at the upper with an air-outlet tube. A small water tube is so arranged that with the air tube the two constitute an atomizer. When suction is applied to the air-exhaust tube, the water and air are atomized into the chamber and against the baffle. The water and the wetted dust drain down the sides of the baffle and once again are sprayed into the chamber. After a sufficient quantity of air has been sampled, the water is removed from the instrument, the dust sampler is rinsed several times, the washings being added to the original fluid, and the complete sample is then taken to the laboratory for analysis. By this method both the weight of the dust and the number of particles present may be determined. As previously noted, little data on this instrument are available at this time; but the notes which we have been furnished indicate that this instrument is approximately 95 per cent efficient in removing silica dust from a synthetic dusty atmosphere prepared by adding silica dust to air and passing this into the sampler. The efficiency of this apparatus has been tested against silica dust at the United States Bureau of Mines Experiment Station and found to be only 12 per cent.

Drinker (57) has developed a method of washing dusty air with water. His method consists in passing the air through a large number of small orifices (125) submerged in water, allowing the air to bubble through the water and then causing it to pass upward in con-

tact with a spiral baffle which serves to remove the water from the air before it leaves the instrument.

Concerning washing methods it is to be pointed out that the main difficulty lies in the inability to wet very small particles of dust in the brief interval of time requisite to sampling large volumes of air. One obvious advantage of this method over the sugar-tube method lies in the fact that the water used, if properly distilled, contains little or no dust, while the sugar in the sugar-tube method, no matter how carefully prepared, always contains a large and variable quantity of solids.

SEDIMENTATION METHODS

Miquel (58), in 1879, described a method of collecting dust by allowing it to settle on plates. The number of particles were then counted by means of a microscope. Tissandier (59), in 1880, substituted sheets of paper 2 meters square for the glass of Miquel. In this case the paper was supported horizontally and, after a suitable period of time, the dust was collected by means of a small brush and examined under the microscope. He also exposed tiles to the air, and the water which was collected during a rainstorm from these tiles was evaporated and examined for dust.

Irwin (60), in 1902, estimated dust in Manchester air by collecting a volume of snow 100 square inches in area and 1 inch in depth. The snow was melted and filtered, and the residue was dried and weighed. This method was also used by Cohen and Ruston (19).

Leifman (61) utilized two oil-coated disks, one supported horizontally and the other vertically, on a revolving vertical shaft. By means of a vane the vertical disk is kept facing the wind and in this manner collects some dust by impaction while the horizontal disk collects the dust deposited by sedimentation. The dust-laden oil was removed from the plates by means of ether, and, after evaporation, the dust was again suspended in 5 cubic centimeters of oil. This final suspension was compared with a series of standards made by mixing various quantities of soot and oil. It is obvious that this method permits of only a rough quantitative estimate of the dust present in the atmosphere. That considerable error is introduced in the actual determination of the amount of dust present by the use of standards made in the above-described manner seems obvious, for the nature of the dust may differ so widely from that used in the standards that color would play a very large part in the comparison.

Des Voeuz and Owens (62) used a settlement method for estimating the soot fall of London in 1912. In this case the dust was allowed to fall on the surface of an enameled iron vessel of 2 square feet in area arranged somewhat like a large funnel. The dust was washed down into a bottle beneath the funnel by the rainstorms.

This method is now in use by the Advisory Committee on Atmospheric Pollution of the meteorological office of Great Britain.

Porcelain evaporating dishes were used by Hill in 1913 (21) for the estimation of dust in city air. One of them was exposed on the fire escape of the city hall for a period of six hours and then compared with a similar clean dish in order to estimate the dust fall in the period under observation. Obviously this method affords only a very crude optical quantitative estimate of the dust which falls on the dish at the particular time under observation under the given atmospheric conditions.

Mitchell (63), in 1914, reported the use of rectangular glass plates 5 by 7 inches coated with vaseline and placed on poles 25 or 30 feet above the street level. Whipple and Whipple (64), in a study of the distribution of atmospheric dust in the neighborhood of Boston, utilized tin pails of 2-quart capacity. These were coated inside and out with resistant varnish and suspended on poles about 20 feet above the street level. Each pail contained 1 liter of distilled water. After two weeks' exposure, the pails were brought to the laboratory, the contents removed, and the weight of the dust was determined. This method is an excellent one for the purpose for which it was devised. It does not, however, sample the air, but only permits of an estimate of the quantity of dust which settles on the surface of the water.

Gravity settling methods in general do not assist us in finding out just how much dust a given sample of air contains. By their use we may only arrive at a figure which represents the amount of dust falling on and adhering to a given surface, either oiled, wetted, or dry, in a given period of time. The results obtained by such methods are obviously greatly dependent on the existing meteorological conditions.

IMPINGING METHODS

Instead of sampling dust by allowing it to settle by gravity out of the air onto a surface, another method impinges a definite sample of air on a prepared surface. This type of apparatus possesses the advantage that a definite known volume of air is sampled, and, in addition, by the velocity of the impact a greater percentage of the dust is caught and may be estimated.

One of the earliest types of this method made use of a series of sirup-covered paddles which were revolved in the atmosphere under study. In this case the surface was, of course, really brought into collision with the particles which adhered to and discolored the paddle blades. Obviously this method yields only very crude results.

In the estimation of smoke from chimneys several instruments of this type have been used. The smoke recorder of Eddy, the kapnograph, and the method of Bonham and Weber (22), are all similar

in that a jet of the dust-laden air is impinged against a continuously moving sheet of paper and the amount of dust is estimated by the color imparted to the moving paper. These methods are, of course, only quantitative.

Wells, of the Hygienic Laboratory, suggested the use of the centrifuge for dust estimation. This method consists in admitting a sample of air to the bowl of a high-speed centrifuge which throws down the dust. This apparatus is highly efficient in removing dust from air, but is heavy and very cumbersome. One additional difficulty connected with its use is that of removing the dust from the centrifuge bowl for analysis.

In 1913 Graham Rogers (65) suggested the use of a method which consists in passing a known amount of air through a vertical tube in which a Petrie dish is held horizontally. The dish is of a size somewhat smaller in diameter than the tube. The bottom of the Petrie dish is ruled in squares and is coated with glycerin. The stream of incoming air strikes on the dish before passing around it and leaves its dust on the glycerinated surface to be counted. As will be brought out in a later portion of this paper, it is necessary, in order to deposit dust by impinging, that a rather high velocity of jet be secured. In the Graham Rogers method the velocity of impingement is far too low for high efficiency in the collection of the dust, and, moreover, because of the fact that the impingement is not absolute—that is, the air passes around the edge of the plate—the efficiency must again be greatly reduced.

In 1916 Kotze brought to the attention of the Miners' Phthisis Prevention Committee (66) an instrument which he called the konimeter. This instrument consists of a chamber, one side of which is a vaseline-coated glass plate. Perpendicular to the slide is an impinging orifice. By means of a cylinder and a spring-actuated piston the air is sucked out of the chamber. The only means of ingress of air is through the impinging orifice, and when the air enters the chamber at high velocity in this manner the dust is deposited in the form of a spot on the vaselined plate. The dust may then be counted under the microscope, using a ruled eyepiece. This method has been employed with a high degree of success (67).

Cave (68) in 1914 used an impingement method employing an adhesive coated plate for catching the dust. Doctor Hill has described two forms of dust sampling devices which make use of the principle of impingement (11). The first of these, the photographic dust counter, consists of a metal frame supporting a metal funnel at one end and at the opposite end a photographic plate holder. An anemometer is placed in the funnel-shaped opening, and a moistened photographic plate is placed in the plate holder at the opposite end. Air is forced through the anemometer against the plate. After

the usual type of photographic development, either the particles on the plate may be counted directly or a print may be made and the particles then enumerated. This method is obviously open to the objections of the other of the low-velocity impingement methods, to which is added the error introduced by the use of the photographic method.

The second instrument of this type devised by Hill consists of a hand-actuated piston moving in an air cylinder, the only inlet to which is a nozzle one-eighth inch in diameter. In front of this nozzle and fixed only a small distance from it is a mircoscope cover slip coated with an adhesive preparation. On drawing out the piston a jet of air is impinged on the prepared slide, which catches the dust. By using six slides in series, Hill found that the first slide caught only 62 per cent of the dust. He assumes, however, that all the dust was caught by the six slides, an assumption which there is every reason to consider fallacious. This instrument is similar in principle to the Kotze konimeter. A comparatively high velocity is necessary in order to secure deposition of dust in such a manner. Concerning the Hill counter the South African workers (66) say:

> It is probable that the rate of working is not more than 80 c. c. of air per second, so that the air velocity in the nozzle is about 10 meters per second, which our experience shows to be insufficient. This is borne out by the comparatively low counts obtained by the inventor, e. g., not more than 1 particle per c. c. of air in a schoolroom, a figure which is probably only 2 per cent of the truth.

Of all the impingement methods of sampling dust the Kotze konimeter appears to be the most efficient and suitable for field use. It is small in size, portable, and in its newest form is capable of taking 29 samples on one slide; it makes use of an impinging air jet, which has been carefully studied as to critical velocity, and for these reasons it appears to possess much value in this field.

In 1922 the writer and G. W. Smith reported (69) the use of the impingement principle in a new instrument for sampling dust in air. By means of this instrument the air is impinged at high velocity on a wetted surface and then bubbled through a layer of water. Distilled water of low and uniform dust content is used as the collecting fluid. The instrument samples fairly large volumes of air, being operated at the rate of 1 cubic foot per minute. This instrument was tested by means of the Tyndall beam against tobacco smoke and found to have an efficiency of 66 per cent, and using silica dust the efficiency was found to be 93 per cent. Tested gravimetrically, using silica dust, it was found to have an efficiency of 96 per cent. This instrument will be the sbuject of further discussion in a later portion of this paper.

ELECTROSTATIC METHODS

The fact that electrically charged bodies in an electric field tend to migrate to one of the electric poles has long been known (70, 71). This principle has more recently been applied commercially to the collection of industrial dusts (72, 73, 74, 75). Bill, in 1919, reported (76) the use of this method for the sampling of dust in air. The essential feature of this instrument is a collecting electrode, consisting of a metal tube, and an ionizing electrode, consisting of a metal wire which is placed inside the collecting electrode. The dust particles are charged by the ionizing electrode and travel over to the collecting electrode where they are deposited. But the collection system is only a small part of the complete apparatus. In addition, according to Bill, the apparatus must include a high tension transformer, a rectifying device for the high potential alternating secondary current, a source of alternating current to excite the transformer, and, lastly, a pump or fan for passing the air to be studied through the electrically charged field.

Drinker, Thomson, and Fitchet (77), in 1923, described a greatly simplified form of electrostatic apparatus which possesses a dust removal efficiency of very nearly 100 per cent. This apparatus has again been simplified and described by Drinker and Thomson.[1] It differs from their former apparatus in that current is supplied by four alkali storage cells, from which both the precipitator and suction-fan motor derive the necessary current. The entire apparatus weighs approximately 13 pounds, and appears to be an instrument with considerable practical application.

RESISTANCE METHODS

The last method which we shall attempt to describe makes use of the fact that the resistance of a filtering medium increases as its pores become filled with dust.

The apparatus known as the Anderson and Armspach dust determinator (78) consists of a holder in which a piece of filter paper or other porous fabric is clamped. Air is drawn through the paper at a constant rate and the difference of pressure between the two sides of the paper is determined by means of a U tube, the arms of which open into the holder, one on each side of the paper. The manometer reading indicates the difference of pressure existing between the two sides of the filter. As the paper clogs, more pressure is required to keep the air passing through at the same rate, and the manometer reading thus increases. This instrument is now being developed for use in testing air-washers by the research laboratory of the American

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[1] Drinker, Philip, and Thomson, R. M.: The Determination of Suspensions by Alternating Current Precipitation. Meeting Am. Inst. Min. and Met. Engrs., New York City, February, 1925

Society of Heating and Ventilating Engineers. For this purpose it may be of some value. For hygienic purposes, however, it is at this time, surely of no value. The part played by particles of various sizes and the various quantities of dust encountered constitute factors concerning which this instrument gives us no information. It is highly conceivable, for instance, that a large number of comparatively large particles may give the same reading as a small number of smaller particles. At any rate, the correlation between the actual dust content of the air and the resistance to passage through a filter paper is a matter which would take a very long time and much arduous labor to evolve, if it could be done at all. That this is so is clearly brought out in a later communication from the same group of workers (79).

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HIGHWAY SIGNS TO SHOW CITY HAS APPROVED WATER SUPPLY

MINNESOTA STATE BOARD OF HEALTH POSTS SIGNS ON HIGHWAYS APPROACHING MUNICIPALITIES HAVING WATER SUPPLIES APPROVED BY STATE BOARD OF HEALTH

The Minnesota State Board of Health is arranging for the posting of signs on public highways entering certain municipalities in the State informing the traveling public, particularly the tourist, that the water supply of the particular town has been approved as safe by the State board of health. The signs will be approximately 18 inches in width by 24 inches in height and will be attached to the standard of and immediately below the highway sign bearing the name of the municipality.

In the case of State trunk highways, the signs will be placed by the State highway department as directed by the State board of health, and arrangements will be made through the county highway engineers for the posting of these signs on other roads. Municipalities which are permitted to post these signs agree to have the water supplies investigated at least once each year and to make any reasonable changes, alterations, improvements, or repairs to the water-supply system which may be necessary from time to time in order to maintain the system in a satisfactory and approved condition, and also agree to advise the State board of health in advance when any changes in the system are contemplated and to notify immediately the State board of health in case of any accident to the system which might impair the sanitary quality of the water. These municipalities further agree to make no objection to the removal of said highway signs in case the water supply is at any time found to be in a condition which would be considered unsatisfactory from a sanitary point of view by the State board of health.

PUBLIC
WATER
SUPPLY
APPROVED BY THE
MINNESOTA STATE
BOARD OF HEALTH

It is felt that the posting of these signs advising the traveling public, particularly the tourist, as to which water supplies are safe for drinking purposes will be information which will be greatly appreciated by many. Incidentally, it is good advertising for the municipality and should encourage other cities and villages whose water supplies are not already safe to make the necessary changes so as to place them on the approved list.

DIGEST OF PUBLIC HEALTH COURT DECISION

State law and board of health regulations held to conflict with Harrison antinarcotic act.—(United States Circuit Court of Appeals, Sixth Circuit; decided July 2, 1924.) Chapter 105 of the Tennessee acts of 1919 provided that a physician might prescribe a 30-day supply, not exceeding 8 grains per day, of morphine to a patient presenting a health officer's certificate showing that the patient was incurably addicted to the use of morphine. The State board of health adopted regulations thereunder providing that a local health officer or a delegated physician might make these certificates of incurability, and that the words "incurably addicted" were construed to mean and apply only to narcotic addicts affected with incurable diseases or infirmity of age. A physician during a period of nine months had given to 108 morphine addicts a total of 4,095 prescriptions calling for 79,592 grains of morphine. Pursuant to the Tennessee law and regulations he required his patients to bring the certificate mentioned. The court affirmed his conviction for violating the Harrison Act, holding the Tennessee law and regulations to be in conflict with the Harrison Act as interpreted in the case of United States *v.* Behrman,[1] 42 Sup Ct. 303. (Simmons *v.* United States, 300 Fed. 321.)

DEATH RATES IN A GROUP OF INSURED PERSONS

COMPARISON OF PRINCIPAL CAUSES OF DEATH, JANUARY AND FEBRUARY, 1925, AND FEBRUARY AND YEAR, 1924

The accompanying table is taken from the Statistical Bulletin for March, 1925, published by the Metropolitan Life Insurance Co., and presents the mortality experience of the industrial insurance department of the company for February, 1925, as compared with January, 1925, and with February and the year, 1924. The rates are based on a strength of approximately 16,000,000 insured persons.

Two especially favorable items are noted in the February mortality record. The first is the continued low mortality from tuberculosis. For this month, which usually shows one of the highest death rates for tuberculosis, the rate was a little more than 1 per cent below the average for the whole year of 1924. The second is the remarkably low rates for the four epidemic diseases of childhood—measles, scarlet fever, whooping cough, and diphtheria. As compared with February, 1924, more favorable rates are also shown for diseases incident to maternity.

On the other hand, the mortality from influenza rose sharply as compared with January, and the death rate from this cause was also 26 per cent higher than in February, 1924. The combined mortality

[1] Public Health Reports, August 11, 1922, p. 1952.

for the degenerative diseases is running a little higher than last year; and for the sixth time in seven successive months the diabetes death rate was higher than for the corresponding month of the preceding year.

Death rates (annual basis) for principal causes per 100,000 lives exposed, January and February, 1925, and February and year, 1924

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Death rate per 100,000 lives exposed [1]			
	Feb., 1925	Jan., 1925	Feb., 1924	Year 1924 [2]
Total—all causes	1007.6	952.6	1018.9	907.5
Typhoid fever	2.6	4.4	2.5	4.4
Measles	2.1	2.3	9.6	7.2
Scarlet fever	4.2	5.1	6.6	4.4
Whooping cough	6.9	5.1	8.0	7.4
Diphtheria	11.6	15.8	17.2	13.2
Influenza	32.7	25.1	26.0	16.0
Tuberculosis (all forms)	103.2	90.1	107.9	104.5
Tuberculosis of respiratory system	92.1	84.8	97.2	92.6
Cancer	70.7	70.7	70.4	70.4
Diabetes mellitus	16.7	19.1	15.6	14.9
Cerebral hemorrhage	61.2	58.5	67.9	60.2
Organic diseases of heart	145.3	143.2	137.8	123.7
Pneumonia (all forms)	137.1	125.4	136.6	88.8
Other respiratory diseases	17.8	16.8	18.5	13.9
Diarrhea and enteritis	19.0	17.0	17.6	32.2
Bright's disease (chronic nephritis)	83.0	70.3	75.6	65.5
Puerperal state	18.4	14.4	19.4	16.8
Suicides	7.2	5.7	6.2	7.2
Homicides	6.0	6.6	5.7	7.1
Other external causes (excluding suicides and homicides)	55.3	59.2	54.5	62.7
Traumatism by automobile	8.1	11.0	9.5	15.7
All other causes	207.0	192.0	215.2	187.0

[1] All figures include infants insured under one year of age.
[2] Based on provisional estimate of lives exposed to risk in 1924

DEATHS DURING WEEK ENDED APRIL 4, 1925

Summary of information received by telegraph from industrial insurance companies for week ended April 4, 1925, and corresponding week of 1924. (From the Weekly Health Index, April 7, 1925, issued by the Bureau of the Census, Department of Commerce.)

	Week ended Apr. 4, 1925	Corresponding week, 1924
Policies in force	59,279,062	55,514,283
Number of death claims	12,622	11,136
Death claims per 1,000 policies in force, annual rate	11.1	10.5

Deaths from all causes in certain large cities of the United States during the week ended April 4, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, April 7, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Apr. 4, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate week ended Apr. 4, 1925 [2]
	Total deaths	Death rate [1]		Week ended Apr 4, 1925	Corresponding week, 1924	
Total (65 cities)	7,737	14.6	[3] 14.7	859	[3] 1,008	
Akron	41			3	11	33
Albany [4]	45	19.6	16.3	8	5	178
Atlanta	63	14.1	23.4	10	13	
Baltimore [4]	266	17.4	14.5	23	29	67
Birmingham	76	19.3	19.7	10	7	
Boston	266	17.7	16.4	31	37	82
Bridgeport	32			5	4	79
Buffalo	148	13.9	15.6	24	24	98
Cambridge	28	13.0	11.6	2	2	34
Camden	27	10.9	14.9	2	9	33
Chicago [4]	806	14.0	13.3	109	120	96
Cincinnati	158	20.1	17.4	13	9	77
Cleveland	205	11.4	10.7	25	27	62
Columbus	91	17.3	15.7	8	11	75
Dallas	54	14.6	7.2	4	10	
Dayton	42	12.7	13.6	1	19	16
Denver	104			8	15	
Des Moines	36	12.6	15.1	1	4	17
Detroit	305			55	52	93
Duluth	23	10.9	11.5	1	4	21
Erie	28			3	3	59
Fall River [4]	50	21.5	13.4	14	5	201
Flint	23			5	9	82
Fort Worth	30	10.3	12.0	3	7	
Grand Rapids	33	11.4	17.9	7	8	109
Houston	47			1	4	
Indianapolis	101	14.7	15.0	14	14	96
Jacksonville, Fla	33	16.4	16.3	1	3	2
Jersey City	86	14.2	12.7	8	13	56
Kansas City, Kans	37	15.6	18.4	3	5	63
Kansas City, Mo	118	16.7	19.1	12	20	
Los Angeles	233			19	28	53
Louisville	94	18.9	17.8	3	12	26
Lowell	32	14.3	16.7	5	9	87
Lynn	22	11.0	14.6	2	6	53
Memphis	81	24.2	24.2	7	8	
Milwaukee	134	13.9	10.8	14	16	64
Minneapolis	139	17.0	12.7	20	7	107
Nashville [4]	61	25.6	18.6	4	5	
New Bedford	39	15.0	7.9	12	6	199
New Haven	58	16.9	16.9	9	12	116
New Orleans	144	18.1	21.9	15	15	
New York	1,508	12.9	13.9	185	196	74
Bronx Borough	178	10.3	10.6	23	16	80
Brooklyn Borough	524	12.2	12.6	61	87	64
Manhattan Borough	638	14.7	16.6	88	76	88
Queens Borough	131	11.9	12.1	12	15	60
Richmond Borough	37	14.4	19.9	1	2	18
Newark, N. J	108	12.4	11.8	10	19	46
Norfolk	43	13.3	10.8	6	6	107
Oakland	61	12.5	12.0	2	5	23
Oklahoma City	21	10.2	10.0	3	1	
Omaha	62	15.3	12.5	3	4	29
Paterson	27	9.9	16.7	4	5	67
Philadelphia	527	13.9	15.9	64	68	80
Pittsburgh	233	19.2	22.6	25	41	88
Portland, Oreg	78	14.4	12.0	7	5	72
Providence	83	17.7	16.3	7	16	56
Richmond	45	12.6	18.7	5	5	61
Rochester	84	13.2		9		71
St Louis	268	17.0	15.7	15	21	
St. Paul	83	17.6	12.0	6	8	51
Salt Lake City [4]	21	8.4	17.0	2	5	31
San Antonio	59	15.5	16.9	5	7	

[1] Annual rate per 1,000 population.

[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.

[3] Data for 63 cities.

[4] Deaths for week ended Friday, Apr. 3, 1925.

Deaths from all causes in certain large cities in the United States during the week ended April 4, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, April 7, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Apr. 4, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate week ended Apr. 4, 1925
	Total deaths	Death rate		Week ended Apr. 4, 1925	Corresponding week, 1924	
San Francisco	179	16.7	17.2	9	18	52
Schenectady	27	13.8	13.5	2	4	56
Seattle	67			2	6	20
Somerville	23	11.7	8.8	2	3	54
Spokane	33			3	3	65
Springfield, Mass	43	14.7	11.9	7	5	104
Syracuse	42	11.4	16.1	4	12	50
Tacoma	28	14.0	11.1	3	2	71
Toledo	73	13.2	15.3	10	12	91
Trenton	45	17.8	16.5	4	7	65
Utica	36	17.5		4		82
Washington, D. C	144	15.1	15.5	8	17	45
Waterbury	16			2	2	44
Wilmington, Del	28	12.0	7.8	2	1	46
Worcester	63	16.5	13.3	14	4	162
Yonkers	38	17.7	10.0	4	3	58
Youngstown	31	10.1	14.1	3	7	38

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended April 11, 1925

ALABAMA	Cases
Cerebrospinal meningitis	1
Chicken pox	34
Dengue	1
Diphtheria	13
Dysentery	7
Influenza	205
Malaria	21
Measles	25
Mumps	83
Ophthalmia neonatorum	1
Pellagra	25
Pneumonia	121
Poliomyelitis	1
Scarlet fever	42
Smallpox	123
Tetanus	1
Tuberculosis	56
Typhoid fever	10
Whooping cough	35

ARIZONA	
Diphtheria	3
Measles	66
Mumps	5
Scarlet fever	6
Trachoma	1
Tuberculosis	6
Whooping cough	4

ARKANSAS	
Chicken pox	16
Diphtheria	5
Hookworm disease	4
Influenza	231
Malaria	38
Measles	33
Mumps	33
Pellagra	20

ARKANSAS—continued	Cases
Scarlet fever	2
Smallpox	4
Trachoma	1
Tuberculosis	15
Typhoid fever	3
Whooping cough	18

CALIFORNIA	
Cerebrospinal meningitis - Los Angeles	1
Diphtheria	101
Influenza	40
Leprosy—Sacramento	1
Lethargic encephalitis	
Alameda	1
Berkeley	1
Measles	105
Poliomyelitis - Los Angeles	2
Scarlet fever	110
Smallpox	
Los Angeles	25
Oakland	10
Orange County	9
San Diego	15
Scattering	21
Typhoid fever	6

COLORADO (Exclusive of Denver)	
Chicken pox	18
Diphtheria	14
Influenza	5
Measles	5
Mumps	18
Pneumonia	5
Scarlet fever	21
Tuberculosis	23
Typhoid fever	1
Whooping cough	9

CONNECTICUT	Cases
Chicken pox	39
Diphtheria	27
German measles	41
Influenza	17
Lethargic encephalitis	1
Measles	71
Mumps	13
Paratyphoid fever	2
Pneumonia (all forms)	79
Scarlet fever	130
Tuberculosis (all forms)	35
Typhoid fever	3
Whooping cough	68

DELAWARE	
Measles	3
Mumps	1
Pneumonia	1
Scarlet fever	1
Tuberculosis	8
Whooping cough	2

FLORIDA	
Chicken pox	15
Diphtheria	6
Influenza	53
Malaria	12
Measles	7
Mumps	123
Pneumonia	139
Scarlet fever	6
Smallpox	4
Tetanus	5
Tuberculosis	62
Typhoid fever	13
Whooping cough	29

GEORGIA	
Chicken pox	33
Conjunctivitis (infectious)	2
Diphtheria	11
Dysentery	8
Hookworm disease	3
Influenza	359
Malaria	27
Measles	16
Mumps	102
Pellagra	14
Pneumonia	118
Poliomyelitis	1
Scarlet fever	5
Septic sore throat	14
Smallpox	19
Tetanus	1
Trachoma	1
Tuberculosis	34
Typhoid fever	17
Typhus fever	1
Whooping cough	38

ILLINOIS	
Cerebrospinal meningitis:	
Adams County	1
Cook County	1
Fayette County	1
Diphtheria:	
Cook County	54
Scattering	24

ILLINOIS—continued	Cases
Influenza	50
Lethargic encephalitis—Alexander County	1
Measles	1,160
Pneumonia	334
Poliomyelitis—Lee County	1
Scarlet fever:	
Cook County	280
Lawrence County	8
Schuyler County	11
Scattering	115
Smallpox	17
Tuberculosis	287
Typhoid fever	13
Whooping cough	278

INDIANA	
Cerebrospinal meningitis	1
Chicken pox	50
Diphtheria	23
Influenza	284
Measles	116
Mumps	3
Pneumonia	13
Poliomyelitis	1
Scarlet fever:	
Allen County	17
Cass County	12
Elkhart County	52
Fulton County	10
Huntington County	9
Laporte County	9
Miami County	14
St. Joseph County	28
Vanderburgh County	16
Scattering	95
Smallpox	47
Tuberculosis	66
Typhoid fever	3
Whooping cough	87

IOWA	
Diphtheria	16
Scarlet fever	36
Smallpox	16
Typhoid fever	1

KANSAS	
Cerebrospinal meningitis	2
Chicken pox	55
Diphtheria	22
German measles	2
Influenza	32
Measles	11
Mumps	265
Pneumonia	85
Poliomyelitis	1
Scarlet fever	115
Smallpox	10
Tuberculosis	45
Typhoid fever	4
Whooping cough	1[illegible]

LOUISIANA	
Diphtheria	10
Hookworm disease	5
Influenza	38
Lethargic encephalitis	2
Malaria	9

LOUISIANA—continued	Cases
Pellagra	10
Pneumonia	41
Scarlet fever	13
Smallpox	20
Tuberculosis	35
Typhoid fever	19
Whooping cough	16

MARYLAND [1]

Cerebrospinal meningitis	1
Chicken pox	96
Diphtheria	15
German measles	3
Influenza	32
Measles	29
Mumps	80
Pneumonia (all forms)	107
Scarlet fever	56
Smallpox	1
Tetanus	1
Tuberculosis	88
Typhoid fever	4
Vincent's angina	1
Whooping cough	107

MASSACHUSETTS

Cerebrospinal meningitis	5
Chicken pox	175
Conjunctivitis (suppurative)	24
Diphtheria	97
German measles	279
Influenza	55
Lethargic encephalitis	2
Measles	810
Mumps	87
Ophthalmia neonatorum	18
Pneumonia (lobar)	159
Poliomyelitis	1
Scarlet fever	283
Septic sore throat	4
Tetanus	1
Trachoma	3
Tuberculosis (all forms)	158
Typhoid fever	8
Whooping cough	170

MICHIGAN

Diphtheria	80
Measles	234
Pneumonia	138
Scarlet fever	378
Smallpox	20
Tuberculosis	107
Typhoid fever	9
Whooping cough	132

MINNESOTA

Cerebrospinal meningitis	1
Chicken pox	60
Diphtheria	58
Influenza	4
Lethargic encephalitis	1
Measles	15
Pneumonia	12
Scarlet fever	186

[1] Week ended Friday.

MINNESOTA—continued	Cases
Smallpox	8
Tuberculosis	90
Typhoid fever	8
Whooping cough	23

MISSISSIPPI

Diphtheria	8
Scarlet fever	1
Smallpox	35
Typhoid fever	6

MONTANA

Cerebrospinal meningitis	1
Chicken pox	11
Diphtheria	17
German measles	70
Influenza	3
Measles	22
Mumps	21
Scarlet fever	31
Smallpox	11
Tuberculosis	8
Typhoid fever	3
Whooping cough	5

NEW JERSEY

Anthrax	1
Chicken pox	107
Diphtheria	78
Influenza	17
Measles	211
Pneumonia	129
Poliomyelitis	2
Scarlet fever	275
Smallpox	2
Trachoma	1
Typhoid fever	3
Whooping cough	255

NEW MEXICO

Chicken pox	8
Diphtheria	3
German measles	1
Influenza	5
Measles	18
Mumps	7
Poliomyelitis	2
Pneumonia	6
Scarlet fever	6
Tuberculosis	7
Typhoid fever	1
Whooping cough	11

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	8
Diphtheria	85
Influenza	136
Measles	582
Pneumonia	450
Scarlet fever	379
Smallpox	6
Typhoid fever	17
Whooping cough	198

NORTH CAROLINA

	Cases
Cerebrospinal meningitis	1
Chicken pox	119
Diphtheria	24
German measles	1
Measles	19
Poliomyelitis	2
Scarlet fever	25
Septic sore throat	6
Smallpox	80
Whooping cough	81

OREGON

	Cases
Cerebrospinal meningitis	[1] 4
Chicken pox	19
Diphtheria:	
Portland	14
Scattering	10
Influenza	386
Measles	3
Mumps	29
Ophthalmia neonatorum	1
Pneumonia	[1] 13
Scarlet fever:	
Portland	13
Scattering	19
Smallpox	8
Tuberculosis	14
Typhoid fever	4
Whooping cough	7

SOUTH DAKOTA

	Cases
Chicken pox	8
Diphtheria	2
Lethargic encephalitis	1
Measles	1
Pneumonia	10
Scarlet fever	38
Smallpox	5

TEXAS

	Cases
Chicken pox	105
Diphtheria	34
Dysentery (epidemic)	3
Influenza	274
Measles	82
Mumps	117
Paratyphoid fever	2
Pellagra	6
Pneumonia	59
Scarlet fever	35
Smallpox	59
Trachoma	2
Tuberculosis	49
Typhoid fever	4
Whooping cough	40

VERMONT

	Cases
Chicken pox	28
Diphtheria	2
Measles	1
Mumps	61

[1] Deaths.

VERMONT—continued

	Cases
Scarlet fever	11
Whooping cough	2

VIRGINIA

	Cases
Poliomyelitis—Westmoreland County	1
Smallpox—Arlington County	3

WASHINGTON

	Cases
Cerebrospinal meningitis—Everett	1
Chicken pox	124
Diphtheria	18
German measles	22
Measles	33
Mumps	112
Pneumonia	1
Scarlet fever	48
Smallpox	40
Tuberculosis	60
Typhoid fever	4
Whooping cough	103

WEST VIRGINIA

	Cases
Diphtheria	2
Scarlet fever	16
Smallpox	2
Typhoid fever	1

WISCONSIN

	Cases
Milwaukee:	
Chicken pox	22
Diphtheria	12
German measles	176
Influenza	2
Measles	205
Mumps	64
Pneumonia	18
Scarlet fever	13
Smallpox	7
Tuberculosis	10
Whooping cough	23
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	118
Diphtheria	31
German measles	117
Influenza	369
Measles	205
Mumps	239
Pneumonia	39
Scarlet fever	133
Smallpox	28
Tuberculosis	16
Typhoid fever	2
Whooping cough	41

WYOMING

	Cases
Chicken pox	2
Measles	9
Mumps	3
Pneumonia	1
Rocky Mountain spotted fever	2
Scarlet fever	7
Typhoid fever	1

Reports for Week Ended April 4, 1925

DISTRICT OF COLUMBIA

	Cases
Chicken pox	23
Diphtheria	8
Influenza	2
Lethargic encephalitis	1
Measles	42
Pneumonia	38
Poliomyelitis	1
Scarlet fever	26
Smallpox	7
Tuberculosis	31
Typhoid fever	1
Whooping cough	15

GEORGIA

	Cases
Chicken pox	58
Conjunctivitis (infectious)	1
Diphtheria	15
Dysentery	9
Hookworm disease	5
Influenza	929
Malaria	51
Measles	44
Mumps	182
Paratyphoid fever	3
Pellagra	10
Pneumonia	183
Rabies	2
Scarlet fever	13
Septic sore throat	5
Smallpox	7
Tetanus	1
Trachoma	1
Tuberculosis	46
Typhoid fever	12
Whooping cough	91

NEBRASKA

	Cases
Chicken pox	12
Diphtheria	7
Measles	5
Mumps	3
Scarlet fever	11
Smallpox	22
Tuberculosis	1

NORTH DAKOTA

	Cases
Chicken pox	14
Diphtheria	2
Measles	1
Mumps	12
Pneumonia	23
Scarlet fever	33
Smallpox	14
Trachoma	1
Tuberculosis	2
Typhoid fever	1
Whooping cough	27

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

	Cases
Cerebrospinal meningitis:	
Comanche County	1
Harper County	1
Leflore County	1
Diphtheria	8
Influenza	358
Pneumonia	97
Scarlet fever:	
Washington County	17
Scattering	11
Smallpox	5
Typhoid fever	4
Whooping cough	21

Report for Week Ended March 21, 1925

NORTH DAKOTA

	Cases
Chicken pox	15
Diphtheria	4
German measles	1
Measles	7
Mumps	12
Pneumonia	16
Scarlet fever	83
Smallpox	9
Tuberculosis	5
Typhoid fever	1
Whooping cough	13

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
March, 1925										
Alabama	9	54	2,767	107	138	45	6	114	672	56
Connecticut	3	206	65	1	632			637	0	12
Florida		30	90	44	30	11		16	22	39
Indiana	1	118	821				2	951		21
Massachusetts	10	429	374		2,747		7	1,458		42
Nebraska	1	30	77				1	73		3
Wisconsin	0	170	311		2,601		6	600	197	6

Number of Cases of Certain Communicable Diseases Reported for the Month of January, 1925, by State Health Officers

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	322	153	73	313	125	995	134	55	122
Arizona	41	13	290	96	29	83	112	1	10
Arkansas	170	29	175	147	51	48	[1] 33	37	72
California	1,387	636	185	654	686	695	809	50	620
Colorado	495	99	31	430	205	3	151	12	37
Connecticut	443	246	232	178	814		137	16	306
Delaware	12	24	7	19	18		36		11
District of Columbia	179	76	45		134	11	103	31	53
Florida	36	40	8	118	9	4	32	49	14
Georgia	89	68	26	144	30	14	50	9	21
Idaho		1			54				
Illinois	1,877	584	1,575	1,092	2,064	210	907	119	1,191
Indiana		257			927			55	
Iowa	87	91	11	44	265	148	[1] 1	([2])	9
Kansas	667	178	24	1,659	530	38	142	4	177
Kentucky [3]									
Louisiana	37	80	20		77	265	[1] 123	144	25
Maine	235	51	68	324	120	1	[1] 46	23	107
Maryland	316	150	177	156	411		216	44	310
Massachusetts	1,394	578	1,321	422	1,684		626	46	529
Michigan	1,115	421	707	499	1,310	151	448	54	505
Minnesota	682	264	75		1,220	341	276	11	110
Mississippi	881	138	302	1,997	69	141	322	123	591
Missouri	354	355	30	111	1,242	56	170	17	60
Montana	113	52	31	40	169	97	54	6	115
Nebraska		59			107			12	
New Hampshire [4]									
New Jersey	963	445	483		1,024	35	422	50	1,037
New Mexico [4]									
New York	2,459	1,366	1,023	1,105	2,539	58	1,556	342	1,464
North Carolina	659	205	117		180	311		8	455
North Dakota	131	24	28	61	350	50	14	3	27
Ohio	1,967	503	390	667	2,128	706	599	91	660
Oklahoma	252	107	45	202	221	131	101	137	148
Oregon	203	129	20	90	182	170	64	10	30
Pennsylvania	2,542	961	2,356	2,302	2,690	27	479	95	1,161
Rhode Island		63			115			7	
South Carolina	57	100	1	48	8	92	10	10	9
South Dakota	132	37	15	8	241	45	16	15	16
Tennessee	260	84	116	1	95	447	100	44	234
Texas [3]									
Utah	662	47	44	198	55	23	[1] 12	1	87
Vermont	210	10	8	285	104		[1] 11	4	79
Virginia	910	176	459		239	27	[1] 395	24	923
Washington	580	180	66	468	218	145	152	28	86
West Virginia	294	132	136		244	282	60	115	252
Wisconsin	1,202	227	1,156	1,092	688	263	155	14	483
Wyoming	82	7	5	5	37	7	2	1	4

[1] Pulmonary.
[2] Reports not required by law.
[3] Reports received weekly
[4] Reports received annually.

Case Rates per 1,000 Population (Annual Basis) for the Month of January, 1925

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	1.54	0.73	0.35	1.49	0.60	4.75	0.64	0.26	0.58
Arizona	1.18	.38	8.37	2.77	.84	2.40	3.23	.03	.29
Arkansas	1.08	.18	1.11	.93	.32	.30	[1] .21	.24	.46
California	4.03	1.86	.54	1.91	2.01	2.03	2.37	.15	1.82
Colorado	5.72	1.14	.36	4.97	2.37	.03	1.74	.14	.43
Connecticut	3.41	1.89	1.78	1.37	6.26		1.05	.12	2.35
Delaware	.60	1.20	.35	.95	.90		1.81		.55
District of Columbia	4.23	1.80	1.06		3.17	.26	2.44	.73	1.25
Florida	.39	.43	.09	1.27	.10	.04	.35	.53	.15
Georgia	.34	.26	.10	.55	.12	.05	.19	.03	.08
Idaho		.02			1.29				
Illinois	3.17	.99	2.66	1.85	3.49	.35	1.53	.20	2.01
Indiana		.99			3.57			.21	
Iowa	.41	.43	.05	.21	1.25	.70	[1] 0	(2)	.04
Kansas	4.33	1.16	.16	10.77	3.44	.25	.92	.03	1.15
Kentucky [3]									
Louisiana	.23	.50	.13		.48	1.66	[1] .77	.90	.16
Maine	3.54	.77	1.02	4.87	1.81	.02	[1] .69	.35	1.61
Maryland	2.42	1.15	1.36	1.19	3.15		1.65	.34	2.37
Massachusetts	3.98	1.65	3.77	1.20	4.80		1.79	.13	1.51
Michigan	3.16	1.19	2.00	1.41	3.71	.43	1.27	.15	1.43
Minnesota	3.13	1.21	.34		5.00	1.57	1.27	.05	.51
Mississippi	5.79	.91	1.99	13.13	.45	.93	2.12	.81	3.89
Missouri	1.20	1.21	.10	.38	4.22	.19	.58	.06	.20
Montana	2.06	.95	.56	.73	3.08	1.77	.98	.11	2.09
Nebraska		.51			.93			.10	
New Hampshire [4]									
New Jersey	3.23	1.49	1.62		3.44	.12	1.42	.17	3.48
New Mexico [4]									
New York	2.61	1.45	1.08	1.17	2.69	.06	1.65	.36	1.55
North Carolina	2.81	.87	.50		.77	1.33		.03	1.94
North Dakota	2.25	.41	.48	1.05	6.00	.86	.24	.05	.46
Ohio	3.66	.94	.73	1.24	3.96	1.32	1.12	.17	1.23
Oklahoma	1.33	.56	.24	1.06	1.16	.69	.53	.72	.78
Oregon	2.82	1.80	.28	1.25	2.53	2.37	.89	.14	.42
Pennsylvania	3.21	1.21	2.98	2.91	3.40	03	.61	.12	1.47
Rhode Island		1.16			2.12			.13	
South Carolina	.38	.66	.01	.32	.05	.61	.07	.07	.06
South Dakota	2.33	.65	.27	.14	4.26	.80	.28	.27	.28
Tennessee	1.26	.41	.56	0	.46	2.17	.49	.21	1.14
Texas [3]									
Utah	15.83	1.12	1.05	4.73	1.31	.55	[1] .29	.02	2.08
Vermont	7.02	.33	.27	9.52	3.47		[1] .37	.13	2.64
Virginia	4.37	.85	2.21		1.15	.13	[1] 1.90	.12	4.44
Washington	4.62	1.43	.53	3.73	1.74	1.15	1.21	.22	.68
West Virginia	2.16	.97	1.00		1.79	2.07	.44	.85	1.85
Wisconsin	5.05	.95	4.86	4.59	2.89	1.11	.65	.06	2.03
Wyoming	4.35	.37	.27	.27	1.96	.37	.11	.05	.21

[1] Pulmonary.
[2] Reports not required by law.
[3] Reports received weekly.
[4] Reports received annually.

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended March 28, 1925.

Los Angeles, Calif.

Week ended Mar. 28, 1925:
- Number of rats examined 3,642
- Number of rats found to be plague infected 7
- Number of squirrels examined 549
- Number of squirrels found to be plague infected 6

Totals to Mar. 28, 1925:
- Number of rats examined 71,191
- Number of rats found to be plague infected 159
- Number of squirrels examined 5,984
- Number of squirrels found to be plague infected 9

Date of discovery of last plague-infected rodent, Apr. 9, 1925.

Date of last human case, Jan. 15, 1925.

Oakland, Calif.

(Including other East Bay communities)

Week ended Mar. 28, 1925:
- Number of rats examined 2,805
- Number of rats found to be plague infected 0

Totals to Mar. 28, 1925:
- Number of rats examined 29,717
- Number of rats found to be plague infected 21

Date of discovery of last plague-infected rat, Mar. 4, 1925.
Date of last human case, Sept. 10, 1919.

New Orleans, La.

Week ended Mar. 28, 1925:
- Number of vessels inspected 401
- Number of inspections made 1,102
- Number of vessels fumigated with cyanide gas 40
- Number of rodents examined for plague 5,441
- Number of rodents found to be plague infected 0

Totals to Mar. 28, 1925:
- Number of rodents examined for plague 65,664
- Number of rodents found to be plague infected 12

Date of discovery of last plague-infected rat, Jan. 17, 1925.
Date of last human case, occurring in New Orleans, Aug. 20, 1920.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended March 28, 1925, 34 States reported 1,444 cases of diphtheria. For the week ended March 29, 1924, the same States reported 1,633 cases of this disease. One hundred and one cities, situated in all parts of the country and having an aggregate population of more than 28,400,000 reported 922 cases of diphtheria for the week ended March 28, 1925. Last year for the corresponding week they reported 1,020 cases. The estimated expectancy for these cities was 988 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Twenty-nine States reported 4,420 cases of measles for the week ended March 28, 1925, and 16,340 cases of this disease for the week ended March 29, 1924. One hundred and one cities reported 2,801 cases of measles for the week this year, and 6,435 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 34 States—this year, 4,154 cases; last year, 3,902; 101 cities—this year, 2,297; last year, 1,939, estimated expectancy, 1,070 cases.

Smallpox.—For the week ended March 28, 1925, 34 States reported 1,006 cases of smallpox. Last year, for the corresponding week, they reported 1,301 cases. One hundred and one cities reported smallpox for the week as follows: 1925, 312 cases; 1924, 570 cases; estimated expectancy, 111 cases. These cities reported 5

deaths from smallpox for the week this year; 4 at Minneapolis and 1 at St. Paul.

Typhoid fever.—Two hundred and ten cases of typhoid fever were reported for the week ended March 28, 1925, by 33 States. For the corresponding week of 1924 the same States reported 203 cases. One hundred and one cities reported 59 cases of typhoid fever for the week this year, and 75 cases for the corresponding week last year. The estimated expectancy for these cities was 47 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 102 cities as follows: 1925, 1,278 deaths; 1924, 1,297 deaths.

City reports for week ended March 28, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	7	2	1	7	0	0	31	4
New Hampshire:									
Concord	22,408	0	0	0	0	0	0	0	5
Manchester	81,383		2	1		6	1		6
Nashua	29,234	0	0	0		2	2	0	4
Vermont:									
Barre	[1] 10,008	3	0	0	0	0	4	5	1
Burlington	23,013	0	0	0		1	10	16	4
Massachusetts:									
Boston	770,400	30	60	23	6	3	215	8	26
Fall River	120,912	2	4	2	6	0	0	1	7
Springfield	144,227	3	4	2	2	3	35	1	3
Worcester	191,927	12	5	3	1	0	15	0	4
Rhode Island:									
Pawtucket	68,799	6	1	2	0	0	1	0	1
Providence	242,378	0	11	4		4	2	0	16
Connecticut:									
Bridgeport	[1] 143,555	1	7	6	2	2	0	1	9
Hartford	[1] 138,036	4	8	4	0	0	1	3	6
New Haven	172,967	23	4	1	2	0	31	2	6
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	19	14	7	0	0	193	4	20
New York	5,927,625	248	238	277	92	28	133	50	210
Rochester	317,867	12	6	21	0	0	47	30	9
Syracuse	184,511	3	6	5		2	9	14	12
New Jersey:									
Camden	124,157	5	4	9	4	0	48	1	4
Newark	438,699	18	17	12	17	1	29	13	17
Trenton	127,390	1	5	1	1	0	8	0	1

[1] Population Jan. 1, 1920.

City reports for week ended March 28, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
MIDDLE ATLANTIC—con.									
Pennsylvania:									
Philadelphia	1,922,788	58	75	115		6	349	22	71
Pittsburgh	613,442	59	21	9		7	357	20	48
Reading	110,917	12	3	1	0	0	78	5	1
Scranton	140,636	3	3	4	0	0	1	0	10
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	8	9	4	5	9	1	7	23
Cleveland	888,519	94	25	32	7	2	8	4	23
Columbus	261,082	5	4	0		12	2	0	22
Toledo	268,338	8	4	5		6	61	3	5
Indiana:									
Fort Wayne	93,573	7	3	0	0	0	6	0	6
Indianapolis	342,718	22	9	0		4	1	8	25
South Bend	76,709	1	1	2	0	0	2	0	5
Terre Haute	68,939	1	1	0	0	0	2	0	1
Illinois									
Chicago	2,866,121	71	106	58	101	18	605	28	96
Cicero	55,968	4	2	1	0	0	4	0	1
Springfield	61,833	6	1	3	1	0	0	62	0
Michigan									
Detroit	995,668	56	53	28	10	4	16	12	48
Flint	117,968	6	5	5	1	1	12	0	4
Grand Rapids	145,947	11	3	1	2	2	46	0	6
Wisconsin									
Madison	42,519	2	1	0	0	0	7	94	2
Milwaukee	484,595	41	14	16	3	1	314	91	21
Racine	64,393	10	1	0	0	0	49	4	5
Superior	[1] 39,671	3	1	1		1	1	0	1
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	2	1	0	0	0	0	3	1
Minneapolis	409,125	78	15	31		1	8	26	19
St. Paul	241,891	9	13	27	0	0	15	22	10
Iowa:									
Davenport	61,262	2	1	2	0		0	0	
Des Moines	140,923	0	2	1	0		0	0	
Sioux City	79,662	4	2	1	0		0	26	
Waterloo	39,667	15	0	0	0		0	3	
Missouri:									
Kansas City	351,819	11	9	2	21	17	4	34	22
St. Joseph	78,232	3	2	0	0	0	1	3	0
St. Louis	803,853	42	39	51	2	0	13	11	
North Dakota:									
Fargo	24,841	9	1	1	0	0	0	15	0
Grand Forks	14,547	0	0	0	0		0	0	
South Dakota:									
Aberdeen	15,829	0		0	0		0	0	
Sioux Falls	29,206	0	0	0	17	0	1	0	0
Nebraska:									
Lincoln	58,761	11	2	1	0	0	2	3	1
Omaha	204,382	7	4	2	0	0	0	0	18
Kansas									
Topeka	52,555	5	1	0	1	1	0	127	4
Wichita	79,261	23	1	4		2	1	1	2
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	2	2	0	0	0	2	3	5
Maryland:									
Baltimore	773,580	67	25	24	17	3	3	47	48
Cumberland	32,361		1	0	2	0	0		0
Frederick	11,301	0	1	0	2	0	0	0	2
District of Columbia:									
Washington	[1] 437,571	33	10	10	0	0	30		19

[1] Population Jan. 1, 1920.

City reports for week ended March 28, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
SOUTH ATLANTIC—con.									
Virginia:									
Lynchburg	30,277	1	0	0	0	0	1	28	4
Norfolk	159,089	41	1	6	0	0	5	69	4
Richmond	181,044	0	2	0	0	0	0	0	4
Roanoke	55,502	4	1	1	0	0	2	0	3
West Virginia:									
Charleston	45,597	10	1	2	0	0	17	1	1
Huntington	57,918	0	1	0	0	--------	0	0	--------
Wheeling	[1] 56,208	1	2	0	0	0	1	1	5
North Carolina:									
Raleigh	29,171	15	0	0	0	0	1	0	0
Wilmington	35,719	1	0	0	0	0	0	8	3
Winston-Salem	56,230	10	0	1	0	0	4	3	1
South Carolina:									
Charleston	71,245	1	1	0	--------	1	0	2	1
Columbia	39,688	3	1	0	0	0	1	1	5
Greenville	25,789	--------	0	--------	--------	--------	--------	--------	--------
Georgia:									
Atlanta	222,963	2	2	2	0	0	0	1	12
Brunswick	15,937	--------	0	0	1	0	0	--------	0
Savannah	89,448	2	1	0	16	2	0	4	2
Florida:									
St. Petersburg	24,403	0	0	0	0	0	0	0	3
Tampa	56,050	1	1	1	0	0	0	0	1
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	--------	1	--------	--------	--------	--------	--------	--------
Louisville	257,671	3	5	1	13	1	3	3	17
Tennessee:									
Memphis	170,067	9	6	5	--------	3	3	16	9
Nashville	121,128	2	1	0	--------	4	0	1	0
Alabama:									
Birmingham	195,901	16	2	2	16	3	0	2	13
Mobile	63,858	0	0	2	3	3	0	0	2
Montgomery	45,383	0	0	0	1	0	0	8	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	0	1	2	0	--------	0	1	--------
Little Rock	70,916	0	1	1	15	2	2	1	4
Louisiana:									
New Orleans	404,575	13	10	9	4	1	0	0	4
Shreveport	54,590	1	--------	0	--------	1	0	0	2
Oklahoma:									
Oklahoma	101,150	0	1	2	8	0	0	0	1
Tulsa	102,018	--------	1	1	0	--------	5	--------	--------
Texas:									
Dallas	177,274	18	3	11	3	1	0	4	7
Galveston	46,877	0	0	1	0	0	0	0	4
Houston	154,970	11	2	0	0	0	0	1	3
San Antonio	184,727	2	2	2	--------	2	0	1	9
MOUNTAIN									
Montana:									
Billings	16,927	1	0	0	0	0	1	18	0
Great Falls	27,787	1	1	1	0	0	0	3	2
Helena	[1] 12,037	0	0	0	0	0	0	0	1
Missoula	[1] 12,668	0	1	1	0	0	2	0	1
Idaho:									
Boise	22,806	0	0	0	0	0	0	0	0
Colorado:									
Denver	272,031	--------	9	--------	--------	2	--------	--------	7
Pueblo	43,519	8	1	0	--------	2	0	3	8
New Mexico:									
Albuquerque	16,648	8	1	0	3	0	0	9	1
Arizona:									
Phoenix	33,899	1	--------	1	--------	1	0	0	4

[1] Population Jan. 1, 1920.

City reports for week ended March 28, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MOUNTAIN—continued									
Utah:									
Salt Lake City	126,241	18	2	4	0	0	0	50	2
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	57	5	2	0	-------	3	44	-------
Spokane	104,573	-------	2	-------	-------	-------	-------	-------	-------
Tacoma	101,731	13	1	2	2	0	1	7	2
Oregon:									
Portland	273,621	20	3	12	38	4	2	10	10
California:									
Los Angeles	666,853	71	40	34	46	8	33	20	25
Sacramento	69,950	-------	1	0	1	0	1	-------	4
San Francisco	539,038	44	26	20	9	5	11	45	8

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	1	22	0	0	0	0	0	0	0	3	24
New Hampshire:											
Concord	1	4	0	0	0	1	0	0	0	0	24
Manchester	2	11	0	0	0	0	0	0	0	-------	24
Nashua	2	0	0	0	0	1	0	0	0	0	12
Vermont:											
Barre	1	1	0	0	0	0	0	0	0	0	-------
Burlington	1	0	0	0	0	0	0	1	0	1	13
Massachusetts:											
Boston	61	108	0	0	0	17	1	5	1	44	258
Fall River	3	4	0	0	0	6	1	0	0	5	43
Springfield	6	30	0	0	0	1	0	0	0	6	45
Worcester	9	12	0	0	0	2	0	0	0	7	48
Rhode Island:											
Pawtucket	1	4	0	0	0	0	0	0	0	0	-------
Providence	9	9	0	0	0	1	0	0	0	0	88
Connecticut:											
Bridgeport	7	22	0	0	0	1	0	0	0	0	45
Hartford	6	8	0	0	0	2	0	0	0	6	49
New Haven	6	19	0	0	0	4	0	0	0	12	49
MIDDLE ATLANTIC											
New York:											
Buffalo	18	22	0	0	0	12	0	1	1	53	155
New York	210	331	1	1	0	[1] 116	8	9	1	126	1,565
Rochester	12	74	0	0	0	7	0	0	0	15	84
Syracuse	15	4	0	0	0	3	1	0	0	0	55
New Jersey:											
Camden	4	26	0	6	0	1	0	0	0	1	37
Newark	25	44	0	0	0	9	1	0	0	68	122
Trenton	3	6	0	0	0	3	0	0	1	0	41
Pennsylvania:											
Philadelphia	67	204	0	7	0	43	3	2	0	122	543
Pittsburgh	20	75	1	0	0	13	1	0	0	15	220
Reading	3	15	0	0	0	1	0	1	0	4	43
Scranton	3	3	0	0	0	2	0	0	0	4	-------

[1] Population Jan. 1, 1920.
[1] Pulmonary tuberculosis only.

City reports for week ended March 28, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough cases reported	Deaths, all causes
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	12	20	2	1	0	10	0	1	0	1	167
Cleveland	33	24	0	0	0	17	2	0	1	26	216
Columbus	7	19	2	9	0	9	0	0	1	6	119
Toledo	13	15	4	0	0	5	0	0	0	23	90
Indiana:											
Fort Wayne	2	8	2	0	0	1	0	0	0	2	30
Indianapolis	11	7	2	21	0	11	0	0	0	16	120
South Bend	3	10	1	0	0	0	0	0	0	1	15
Terre Haute	3	10	0	2	0	1	0	0	0	1	27
Illinois:											
Chicago	88	275	3	1	0	64	2	2	0	138	780
Cicero	2	7	0	0	0	1	0	0	0	1	9
Springfield	1	13	1	0	0	2	0	0	0	0	28
Michigan:											
Detroit	78	141	4	0	0	23	1	1	0	71	268
Flint	6	1	1	0	0	0	1	0	0	0	20
Grand Rapids	8	61	1	1	0	1	0	0	0	8	39
Wisconsin:											
Madison	3	8	1	0	0	0	0	0	0	8	7
Milwaukee	32	24	1	9	0	3	0	0	0	21	106
Racine	5	4	1	1	0	0	0	0	0	2	13
Superior	2	20	4	0	0	3	0	0	0	0	18
WEST NORTH CENTRAL											
Minnesota:											
Duluth	5	28	2	0	0	2	1	0	0	0	25
Minneapolis	30	88	7	10	4	5	1	0	0	2	113
St. Paul	27	47	6	5	1	5	0	0	0	8	70
Iowa:											
Davenport	2	1	2	2			0	0		4	
Des Moines	9	2	2	1			0	0		0	
Sioux City	2	0	1	0			0	0		0	
Waterloo	3	0	0	1			0	0		1	
Missouri:											
Kansas City	10	101	3	0	0	5	1	0	0	11	130
St. Joseph	2	1	0	0	0	0	0	0	0	1	
St. Louis	33	89	3	5	0	17	1	3	1	4	311
North Dakota:											
Fargo	1	2	0	0	0	0	0	0	0	0	9
Grand Forks	1	0	1	0			0	0		0	
South Dakota											
Aberdeen		1		0				0		0	
Sioux Falls	3	1	1	0	0	0	0	0	0	0	7
Nebraska:											
Lincoln	4	3	1	1	0	0	0	0	0	3	11
Omaha	4	5	2	44	0	3	0	0	0	0	76
Kansas.											
Topeka	2	2	1	0	0	1	0	0	0	0	26
Wichita	2	0	4	0	0	0	0	0	0	1	32
SOUTH ATLANTIC											
Delaware:											
Wilmington	2	5	0	0	0	2	0	1	0	0	25
Maryland:											
Baltimore	38	37	0	1	0	19	3	1	0	86	236
Cumberland	1	0	0	0	0	0	0	0	0		9
Frederick	1	0	0	0	0	0	0	0	0	0	6
District of Columbia:											
Washington	22	27	1	3	0	12	1	0	0	17	131
Virginia:											
Lynchburg	0	0	0	0	0	0	1	0	0	2	12
Norfolk	1	1	1	0	0	3	1	0	0	15	
Richmond	3	0	0	0	0	4	1	0	0	0	49
Roanoke	1	0	1	0	0	1	0	0	0	0	22
West Virginia:											
Charleston	1	0	0	3	0	2	0	1	1	0	23
Huntington	1	2	0	0			0	0		0	
Wheeling	1	2	0	0	0	2	0	1	1	0	27
North Carolina:											
Raleigh	0	1	0	5	0	0	0	1	0	4	7
Wilmington	1	1	0	4	0	0	0	0	0	0	12
Winston-Salem	1	6	2	10	0	0	0	0	0	0	15

City reports for week ended March 28, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough cases reported	Deaths, all causes
SOUTH ATLANTIC—continued											
South Carolina:											
Charleston	0	0	0	0	0	3	0	0	0	0	33
Columbia	0	0	1	0	0	2	1	0	0	6	26
Greenville	1		1				0				
Georgia:											
Atlanta	4	1	4	1	0	7	1	0	0	5	69
Brunswick	0	0	0	0	0	1	0	1	0		2
Savannah	1	0	1	0	0	6	1	0	0	3	37
Florida:											
St. Petersburg	3	0	1	0	0	0	0	0	0	0	22
Tampa	0	1	0	0	0	7	1	0	0	0	25
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2		0				0				
Louisville	5	14	1	0	0	10	0	1	0	15	104
Tennessee:											
Memphis	3	7	1	4	0	4	0	0	1	28	60
Nashville	2	8	1	14	0	6	1	1	0	0	41
Alabama:											
Birmingham	1	19	0	56	0	16	1	8	0	2	86
Mobile	0	0	1	0	0	1	0	0	0	0	18
Montgomery	0	2	0	0	0	0	0	0	0	0	21
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	1	0	1			0	0		0	
Little Rock	1	0	0	0	0	3	0	0	0	1	
Louisiana:											
New Orleans	4	11	4	0	0	20	2	5	1	4	151
Shreveport		1		1	0	1		0	0	0	32
Oklahoma:											
Oklahoma	2	2	5	0	0	1	0	2	0	1	19
Tulsa	1	1	3	0			1	0			
Texas:											
Dallas	2	7	6	0	0	4	0	0	0	12	64
Galveston	0	0	1	2	0	0	0	2	0	0	8
Houston	1	2	0	19	0	3	0	0	0	0	43
San Antonio	0	0	0	0	0	12	1	2	0		75
MOUNTAIN											
Montana:											
Billings	1	1	1	0	0	0	0	0	0	0	4
Great Falls	1	2	1	0	0	0	0	0	0	0	8
Helena	1	0	0	0	0	1	0	0	0	0	8
Missoula	1	1	1	0	0	0	0	0	0	0	4
Idaho:											
Boise	1	3	1	1	0	0	0	0	0	0	3
Colorado:											
Denver	11		3		0	11	0		0		86
Pueblo	1	0	1	0	0	0	0	0	0	0	20
New Mexico:											
Albuquerque	1	1	0	0	0	1	0	0	0	0	5
Arizona:											
Phoenix		2		3	0	19		0	0	0	38
Utah:											
Salt Lake City	3	4	2	0	0	3	0	0	0	5	30
Nevada:											
Reno	0	0	0	1	0	0	0	0	0	2	5
PACIFIC											
Washington:											
Seattle	9	12	2	13			0	1		58	
Spokane	4		8				1				
Tacoma	2	2	2	4	0	1	0	2	0	1	22
Oregon:											
Portland	6	5	4	12	0	6	1	0	0	8	
California:											
Los Angeles	15	38	2	35	0	20	2	3	0	68	243
Sacramento	2	1	0	1	0	4	0	3	0		32
San Francisco	17	19	3	9	0	12	2	0	0	63	150

City reports for week ended March 28, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	Cases	Deaths
NEW ENGLAND											
Massachusetts:											
Boston	2	0	0	0	0	0	0	0	0	2	0
Fall River	0	0	0	0	0	0	0	1	0	0	0
Connecticut:											
Bridgeport	0	0	1	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC											
New York:											
New York	4	5	5	5	0	0	1	2	0	0	0
New Jersey:											
Newark	0	0	2	1	0	0	0	2	0	0	0
Pennsylvania:											
Philadelphia	1	0	4	4	0	0	0	0	0	0	0
Scranton	1	0	0	0	0	0	0	0	0	0	0
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	0	0	0	1	0	0	0	0	0	0	0
Cleveland	1	1	1	1	0	0	0	1	0	0	0
Illinois:											
Chicago	2	1	0	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL											
Missouri:											
St. Joseph	1	1	0	0	0	0	0	0	0	0	0
St. Louis	0	0	0	0	0	0	0	1	0	0	0
North Dakota:											
Grand Forks	0	0	0	0	0	0	0	1	0	0	0
SOUTH ATLANTIC											
Delaware:											
Wilmington	0	0	0	0	0	0	0	0	0	2	0
Maryland:											
Baltimore	1	0	1	2	0	0	0	0	0	0	0
North Carolina:											
Winston-Salem	0	0	0	0	0	1	0	0	0	0	0
Florida:											
Tampa	0	0	0	0	1	0	0	0	0	0	0
EAST SOUTH CENTRAL											
Alabama:											
Birmingham	1	1	0	0	0	0	0	0	0	0	0
Mobile	0	0	0	0	0	1	0	0	0	0	0
WEST SOUTH CENTRAL											
Arkansas:											
Little Rock	0	0	0	0	1	0	0	0	0	0	0
Louisiana:											
New Orleans	0	0	1	1	0	0	0	0	0	0	0
Shreveport	0	0	0	0	0	2	--------	0	0	0	0
Oklahoma:											
Oklahoma	0	0	0	0	1	0	0	0	0	0	0
MOUNTAIN											
Colorado:											
Pueblo	0	1	0	0	0	0	0	0	0	0	0
PACIFIC											
Oregon:											
Portland	1	0	1	2	0	0	0	0	0	0	0
California:											
Los Angeles	1	0	------	0	1	0	0	0	0	0	0
San Francisco	0	0	1	0	0	0	0	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended March 28, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, January 18 to March 28, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28
Total	[2] 163	[3] 166	[2] 175	[2] 168	149	[4] 169	162	[5] 168	167	[6] 168
New England	171	199	191	246	241	[4] 189	233	176	147	119
Middle Atlantic	175	155	171	165	163	178	167	214	196	231
East North Central	130	[3] 135	145	132	123	119	114	128	134	112
West North Central	199	251	255	259	209	299	282	201	199	247
South Atlantic	[2] 138	128	[2] 153	[2] 183	156	114	104	[5] 93	136	95
East South Central	80	97	63	69	80	51	63	40	69	57
West South Central	162	148	176	162	125	162	144	158	97	121
Mountain	239	134	191	95	162	153	86	105	143	134
Pacific	223	293	270	180	165	258	235	197	249	[6] 179

MEASLES CASE RATES

	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28
Total	[2] 213	[3] 214	[2] 254	[2] 297	383	[4] 358	418	[5] 449	506	[6] 507
New England	497	484	570	661	720	[4] 585	656	542	725	755
Middle Atlantic	187	205	205	287	373	343	428	518	598	633
East North Central	379	[3] 373	453	515	688	632	789	740	775	798
West North Central	27	21	17	31	27	73	68	75	93	89
South Atlantic	[2] 38	37	[2] 49	[2] 98	110	81	100	[5] 150	139	136
East South Central	74	91	51	74	51	46	86	11	69	34
West South Central	14	14	37	51	14	51	23	88	42	9
Mountain	248	286	782	153	620	916	29	763	573	38
Pacific	55	17	61	29	64	61	107	110	189	[6] 151

SCARLET FEVER CASE RATES

	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28
Total	[2] 370	[3] 364	[2] 412	[2] 400	390	[4] 408	395	[5] 432	427	[6] 419
New England	596	534	614	561	606	[4] 558	584	534	544	604
Middle Atlantic	326	322	373	407	376	412	372	439	417	405
East North Central	369	[3] 370	426	397	432	434	433	497	498	483
West North Central	804	779	871	728	742	734	775	719	792	755
South Atlantic	[2] 189	185	[2] 255	[2] 277	167	203	171	[5] 224	146	167
East South Central	183	217	97	212	223	183	194	355	286	286
West South Central	195	204	162	121	125	144	185	107	134	102
Mountain	305	258	334	382	248	315	286	200	429	248
Pacific	220	226	258	177	186	223	218	229	218	[6] 222

SMALLPOX CASE RATES

	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28
Total	[2] 70	[3] 67	[2] 76	[2] 79	66	[4] 66	62	[5] 61	63	[6] 58
New England	0	0	0	0	0	[4] 0	0	0	0	0
Middle Atlantic	6	9	2	4	2	3	1	5	8	7
East North Central	48	[3] 35	39	35	56	28	42	39	32	33
West North Central	180	195	145	193	126	120	114	124	102	135
South Atlantic	[2] 38	45	[2] 62	[2] 98	67	43	51	[5] 60	57	67
East South Central	675	652	823	675	532	583	652	446	646	423
West South Central	32	60	125	139	83	116	74	74	107	107
Mountain	95	48	29	162	86	57	48	95	67	19
Pacific	209	177	267	220	215	313	206	247	212	[6] 191

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Racine, Wis., not included.
[4] Hartford, Conn., not included.
[5] Tampa, Fla., not included.
[6] Spokane, Wash., not included.

Summary of weekly reports from cities, January 18 to March 28, 1925—Annual rates per 100,000 population—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28
Total	[2] 17	[3] 18	[2] 13	[2] 13	11	[4] 14	11	[5] 9	12	11
New England	20	7	30	20	0	[4] 13	7	5	30	12
Middle Atlantic	20	19	13	6	10	8	10	5	8	7
East North Central	11	[3] 10	8	6	6	7	11	4	7	3
West North Central	6	12	0	10	4	17	6	10	8	6
South Atlantic	[2] 11	37	[2] 17	[2] 34	8	20	8	[5] 21	22	12
East South Central	29	23	11	40	34	34	34	34	46	57
West South Central	42	60	23	46	42	42	28	28	23	42
Mountain	48	19	29	19	38	76	10	19	0	0
Pacific	15	3	17	12	23	9	15	15	0	[6] 28

INFLUENZA DEATH RATES

	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28
Total	[2] 22	[3] 23	[2] 30	[2] 28	30	[4] 34	30	[5] 34	42	[6] 33
New England	10	27	47	27	17	[4] 40	17	35	30	30
Middle Atlantic	20	16	24	22	21	20	15	24	29	22
East North Central	18	[3] 12	13	17	18	24	27	33	49	40
West North Central	20	15	20	11	22	37	35	33	42	46
South Atlantic	[2] 23	39	[2] 49	[2] 55	55	49	53	[5] 29	53	12
East South Central	63	74	69	63	74	126	103	91	120	86
West South Central	92	82	97	122	153	148	143	107	76	36
Mountain	10	38	57	57	57	19	19	48	48	38
Pacific	12	20	41	4	12	29	29	16	12	53

PNEUMONIA DEATH RATES

	Jan. 24	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28
Total	[2] 211	[3] 206	[2] 225	[2] 222	216	[4] 201	205	[5] 222	217	[6] 206
New England	216	241	211	239	241	[4] 242	226	229	211	219
Middle Atlantic	234	230	253	231	216	185	210	214	217	199
East North Central	142	[3] 145	164	168	184	171	195	241	222	214
West North Central	120	118	134	131	131	166	140	175	173	166
South Atlantic	[2] 275	252	[2] 315	[2] 270	252	305	268	[5] 241	290	252
East South Central	320	303	326	320	320	292	269	366	286	269
West South Central	362	229	352	464	408	260	229	178	178	168
Mountain	324	315	191	277	219	267	162	210	172	200
Pacific	208	217	196	192	213	163	139	155	131	159

[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Racine, Wis., not included.
[4] Hartford, Conn., not included.
[5] Tampa, Fla., not included.
[6] Spokane, Wash., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

CANADA

Communicable diseases—Ontario—March 1-28, 1925.—During the four weeks ended March 28, 1925, communicable diseases were notified in the Province of Ontario, Canada, as follows:

Disease	1925		1924	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis		3	9	7
Chancroid	2		1	
Chicken pox	398		504	
Diphtheria	265	15	250	25
German measles	27		191	1
Goiter	63	5	13	3
Gonorrhea	110		190	
Influenza		55		21
Lethargic encephalitis	7	4	5	4
Measles	1,663	7	2,811	8
Mumps	1,281		1,578	2
Pneumonia		220		251
Poliomyelitis (infantile paralysis)	1	1		
Scarlet fever	681	8	1,134	28
Septic sore throat	7	2	5	1
Smallpox	16		106	28
Syphilis	101		215	
Tuberculosis	159	80	155	100
Typhoid fever	72	8	25	2
Whooping cough	464	13	140	10

Smallpox was reported during the period at eight localities, the greatest number of cases being reported at Welland, viz, four. At two localities three cases each occurred.

ESTHONIA

Typhoid and paratyphoid fever—Typhus fever—January, 1925.—During the month of January, 1925, 36 cases of typhoid fever, with 10 cases of paratyphoid fever, and 4 cases of typhus fever were reported in the Republic of Esthonia. Population, 1,107,059.

FINLAND

Lethargic encephalitis—Typhoid fever—February, 1925.—During the period February 1 to 28, 1925, 7 cases of lethargic encephalitis and 69 cases of typhoid fever with 29 cases of paratyphoid fever, were reported in Finland. Population, 3,435,249, estimated.

ITALY

Malta fever—Sicily—February 23–March 15, 1925.—Malta fever has been reported in the island of Sicily, Italy, as follows: *Catania*—February 23 to March 15, 1925, three cases, occurring in the city of Catania; *Syracuse* (province)—February 23 to March 1, 1925, one case.

MALTA

Lethargic encephalitis—Malta (undulant) fever—Typhoid fever—February 16–28, 1925.—During the period February 16 to 28, 1925, 2 cases of lethargic encephalitis, 11 cases of Malta (undulant) fever, and 3 cases of typhoid fever were reported in the island of Malta. Population, 223,088.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended April 17, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Jan. 25–Feb. 7, 1925: Cases, 4,415; deaths, 2,604.
Calcutta	Feb. 15–28	45	25	
Madras	Feb. 22–Mar. 7	6	6	
Rangoon	Feb. 15–28	5	4	
Siam:				
Bangkok	Feb. 15–21	1	1	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo	Feb. 15–28	1	1	
India				Jan. 25–Feb. 7, 1925: Cases, 7,661; deaths, 6,298.
Bombay	Feb. 15–21		1	
Rangoon	Feb. 15–28	24	22	
Java:				
East Java—				
Soerabaya	Feb. 1–7	1	1	
Palestine				
Jerusalem	Mar. 3–9	1		

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Arabia:				
Aden	Mar. 1–7	1		
Canada:				
British Columbia—				
Ocean Falls	Mar. 21–27	3		Mild cases.
Ontario				Mar. 1–28, 1925: Cases, 16. Corresponding period, year 1924—cases, 166; deaths, 28.
China:				
Hongkong	Feb. 15–21	2	2	
Shanghai	Feb. 15–Mar. 7		4	
Dominican Republic:				
Puerta Plata	Mar. 15–21	2		
Egypt:				
Alexandria	Feb. 26–Mar. 4	1		
Great Britain.				
England and Wales	Mar. 15–21	133		

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended April 17, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
India				Jan. 25–Feb. 7, 1925: Cases, 5,967; deaths, 1,483.
Bombay	Feb. 15–21	52	16	
Calcutta	Feb. 15–28	544	410	
Karachi	Mar. 1–7	8	3	
Madras	Feb. 22–Mar. 7	173	98	
Rangoon	Feb. 15–28	217	49	
Java:				
East Java—				
Soerabaya	Feb. 1–7	87	8	
Mexico:				
Mexico City	Feb. 15–Mar. 21	22		Including municipalities in Federal District.
Salina Cruz	Feb. 22–28	2		
Vera Cruz	Mar. 23–29		1	
Persia:				
Teheran	Jan. 1–31		10	
Peru:				
Arequipa	Jan. 1–31		3	
Siam.				
Bangkok	Feb. 15–21	7	7	
Spain.				
Malaga	Mar. 15–21		2	
Valencia	Mar. 15–21	1		
Syria:				
Beirut	Feb. 11–20	1		
Damascus	Feb. 11–20	22		

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Mar 1–10	2		
Esthonia				Jan. 1–31, 1925: Cases, 4.
Mexico:				
Mexico City	Mar. 8–14	4		
Peru:				
Arequipa	Dec. 1–31		2	
Union of South Africa.				
Cape Province—				
Port Elizabeth	Feb 22–28	1		
Natal—				
Durban	Feb 15–21	1		

Reports Received from December 27, 1924, to April 10, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29–Dec. 27, 1924: Cases, 14; deaths, 13
Colombo	Nov. 16–22	1		
Do	Jan. 11–24	2	2	
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 27,164; deaths, 16,228. Jan. 4–24, 1925: Cases, 7,941; deaths, 4,705.
Bombay	Nov. 23–Dec. 20	4	4	
Do	Jan 18–24	1	1	
Calcutta	Oct 26–Jan. 3	59	51	
Do	Jan. 4–Feb. 14	98	83	
Madras	Nov. 16–Jan. 3	69	40	
Do	Jan 4–Feb. 21	131	92	
Rangoon	Nov. 9–Dec. 20	9	2	
Do	Jan. 4–31	6	4	
Indo-China				Aug. 1–Sept. 30, 1924: Cases, 14; deaths, 10.
Province—				
Anam	Aug. 1–31	1	1	
Cambodia	Aug. 1–Sept. 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov. 30–Dec. 6	1		
Siam:				
Bangkok	Nov. 9–29	4	2	
Do	Jan 18–Feb. 7	5	2	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 10, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 2-Jan. 3	30	13	
Do	Jan. 18-24	3	1	
Brazil:				
Bahia	Feb. 15-Jan. 10	3	3	
British East Africa.				
Tanganyika Territory	Nov 23-Dec. 27	17	10	
Uganda	Aug.-Nov., 1924	242	211	
Canary Islands:				
Las Palmas	Jan. 21-23	2		Stated to be endemic.
Do	Feb. 4	1		Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec. 19	3	1	Vicinity of Santa Cruz de Teneriffe.
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.
Celebes:				
Macassar	Oct 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-Jan. 3	12	9	
Do	Jan. 4-Feb. 18	8	10	Five plague rodents.
China:				
Foochow	Dec. 28-Jan. 3			Present.
Nanking	Nov. 23-Jan. 31			Do.
Shing Hsien	October, 1924		790	
Ecuador:				
Chimborazo Province—				
Alausi District	Jan. 14		14	At two localities on Guayaquil and Quito Railway.
Guayaquil	Nov. 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92
Do	Jan. 1-Mar. 15	59	25	Rats taken, 45,027; rats found infected, 234
Naranjito	Feb 16-Mar 15	1		
Yaguachi	Feb. 1-Mar 15	2	1	
Egypt				Year 1924 Cases, 373. Jan. 1-28, 1925: Cases, 15
City—				
Alexandria	Year 1924	2	2	Last case, Nov 26.
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec. 7.
Suez	do	20	13	Last case, Dec. 20.
Province—				
Dakhalia	Jan. 1-8	1	1	
Kalioubiah	do	3		
Menoufieh	do	7	3	
Gold Coast				September-November, 1924: Deaths, 48
Hawaii.				
Honokaa	Nov. 4	1		Plague-infected rodents found Dec. 9, 1924, and Jan. 15, 1925.
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 28,154; deaths, 21,505. Jan. 4-24, 1925: Cases, 12,364; deaths, 10463.
Bombay	Nov. 22-Jan 3	4	3	
Do	Jan 4-17	2	2	
Do	Feb. 8-14	3	2	
Calcutta	Jan 18-24	1	1	
Karachi	Nov. 30-Dec. 6	2	1	
Do	Jan. 4-Feb 21	12	11	
Madras Presidency	Nov. 23 Jan. 3	685	487	
Do	Jan 4-24	658	511	
Rangoon	Oct 26-Jan. 3	26	25	
Do	Jan 4-Feb. 7	55	47	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 25; deaths, 20.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Saigon	Dec. 25-31	1	1	Including 100 square kilometers of surrounding territory.
Do	Jan. 11-17	2	1	Do.
Iraq	June 29-Dec. 13	18	18	
Japan	Aug. 10-Dec. 6	19		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 10, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri; epidemic.
Pare	Nov. 29			Do.
Sidoardjo	Jan. 2			Declared epidemic, Province of Soerabaya.
Soerabaya	Nov. 16-Dec. 31	71	72	
Do	Jan. 15-22	3	2	
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov. 18-Dec. 22		80	
Do	Jan. 1-14		44	Cheribon Province.
Do	Jan. 30			Present.
Pasoeroean	Dec. 27			Province. Epidemic in one locality.
Pekalongan	Oct. 14-Nov. 3		29	
Do	Nov. 18-Dec. 31		177	
Do	Jan. 1-14		81	Pekalongan Province.
Probalingga	Dec. 27			Province. Epidemic.
Tegal	Oct. 14-Dec. 31		26	
Do	Jan. 1-14		37	Pekalongan Province.
Madagascar:				
Fort Dauphin (port)	Nov. 1-Dec. 15	12	5	
Itasy Province				Nov. 1-Dec. 15, 1924: Cases, 4; deaths, 2.
Majunga (port)	Nov. 1-30	1	1	
Moramanga Province				Nov. 1-Dec. 15, 1924: Cases, 49; deaths, 34. Jan. 16-31, 1925: Cases, 4; deaths, 4.
Tamatave (port)	Nov. 1-30	1	1	
Tananarive Province				Oct. 16-Dec. 31, 1924: Cases, 298; deaths, 274.
Do				Jan. 1-31 Cases, 135; deaths, 114.
Tananarive (town)	Oct. 16-Nov. 30	8	7	Bubonic, pneumonic, septicemic.
Do	Dec. 16-31	4	4	
Do	Jan. 1-15	1	1	
Mauritius Island				Sept. 7-Oct. 18, 1924: Cases, 60, deaths, 53.
Morocco:				
Marrakech				Feb. 9, 1925: Present in native quarter of town. Stated to be pneumonic in form and of high mortality.
Nigeria				August-November, 1924: Cases, 387; deaths, 317.
Peru	February, 1925	6	6	
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan. 25-Feb. 14	2	1	
Siberia:				
Transbaikalia—				
Turga	October, 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Do	Jan. 4-Feb. 28	8	6	
Syria:				
Beirut	Jan. 11-20	1		
Turkey:				
Constantinople	Jan. 9-15	5	5	
Union of South Africa	Jan. 4-Feb. 14	40	15	Native cases, 3; deaths, 1; white, 16 cases, 6 deaths.
Cape Province—				
De Aar District	Nov. 22-Jan. 3	4	1	Native.
Do	Jan. 4-10		2	Natives; on farms.
Do	Jan. 25-31	1	1	Malay camp.
Dronfield	Dec. 7-13	1		8 miles from Kimberley.
Edenburg (town)	Jan. 25-31			Plague infected house mouse.
Kimberley	Dec. 7-27	3	2	
Do	Feb. 1-7	1	1	On farm.
Maraisburg District	Nov. 22-Dec. 13	4	2	Bubonic, on Goedshoop Farm.
Steynsburg District	Jan. 4-10	1		Native; on farm.
Orange Free State—				
Bloemfontein District	Dec. 21-Jan. 3	5	2	
Do	Jan. 11-17	1	1	Native; on farm.
Ficksburg District	Dec. 28-Jan. 3	1	1	
Hoopstad District	Dec. 7-13	1		On farm.
Kroonstad District	Nov. 22-Jan. 3	2	1	
Do	Jan. 18-24	1	1	Native; on farm.
Philippolis District	Dec. 21-27	1		
Vredefort District	Dec. 7-20	2	2	On farms.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 10, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa—Con.				
Transvaal—				
Boshof District	Dec. 7–Jan. 3	3	3	On farm.
Do	Jan. 11–Feb. 14	28	9	Native, 5 cases; white, 6 fatal cases. On farms.
Smithfield	Jan. 11–17	1		
Winburg District	Feb. 8–14	1		On farm. Native.
Wodehouse District	Feb. 1–7	2	1	On farm.
Wolmaransstad District.	Nov. 22–29	1	1	On Farm Wolverspruit Vaal River. Native.
On vessel:				
S. S. Conde				At Marseille, France, Nov. 8, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1–Dec. 31, 1924. Cases, 400.
Algiers	Jan. 1–Feb. 28	6		Jan. 1–20, 1925: Cases, 107.
Arabia:				
Aden	Jan. 25–Feb. 28	9	1	
Bolivia:				
La Paz	Nov. 1–Dec. 31	20	11	
Do	Jan. 1–31		5	
Brazil:				
Pernambuco	Nov. 9–Jan. 3	100	27	
Do	Jan. 4–Feb. 14	78	35	
British East Africa:				
Kenya—				
Mombasa	Jan. 18–24	1		
Unganda—				
Entebbe	Oct. 1–31	4		
British South Africa:				
Northern Rhodesia	Oct. 28–Dec. 15	57	2	
Do	Jan. 27–Feb. 2	3		Natives.
Southern Rhodesia	Jan. 29–Feb. 4	1		
Canada:				
Alberta—				
Calgary	Mar. 15–21	1		Stated to have been contracted in Ontario.
British Columbia—				
Ocean Falls	Mar. 7–20	3		Very mild.
Vancouver	Dec. 14–Jan. 3	32		
Do	Jan. 4–Mar. 21	268		
Victoria	Jan. 18–Feb. 7	2		
Manitoba—				
Winnipeg	Dec. 7–Jan. 3	14		
Do	Jan. 4–Feb. 27	30		
New Brunswick—				
Bonaventure and Gaspe Counties.	Jan. 1–31	1		
Northumberland	Feb. 8–14	1		County.
Ontario				Nov. 30–Dec. 27, 1924: Cases, 33.
Hamilton	Jan. 24–30	1		Dec. 28, 1924, to Feb. 28, 1925: Cases, 41; deaths, 1.
Ceylon				July 27–Nov. 29, 1924: Cases, 27; deaths, 1.
Colombo	Jan. 18–Feb. 7	4		
China:				
Amoy	Nov. 9–Feb. 14			Present. Feb. 22–28: One death.
Antung	Nov. 17–Dec. 28	5		
Do	Jan. 5–Feb. 14	15	1	
Foochow	Nov. 2–Feb. 14			Present.
Hongkong	Nov. 9–Jan. 3	6	2	
Do	Jan. 4–Feb. 7	9	7	
Manchuria—				
Dairen	Jan. 19–Feb. 1	2		
Harbin	Jan. 15–Feb. 11	5		
Nanking	Jan. 4–21			Do.
Shanghai	Dec. 7–27	1	2	
Do	Jan. 18–24	1		
Do	Feb. 1–14	3	4	Deaths among Chinese.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 10, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Chosen:				
Seoul	Dec. 1-31	1		
Colombia:				
Buenaventura	Feb. 15-28	2		
Czechoslovakia				April-June, 1924: Cases, 1; occurring in Province of Moravia.
Dominican Republic:				
Puerta Plata	Mar. 8-14	1		
Ecuador:				
Guayaquil	Nov. 16-Dec 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 31	10		
Do	Jan. 8-28	8		
Esthonia				Dec. 1-31, 1924: Cases, 2.
France				July-December, 1924. Cases, 81.
Dunkirk	Mar 2-8	1		From vessel. In quarantine.
St. Malo	Feb 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis.
Germany				June 29-Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1-10	1		
Gibraltar	Dec. 8-14	1		
Gold Coast				July-September, 1924: Cases, 82; deaths, 1.
Great Britain:				
England and Wales	Nov. 23-Jan. 3	472		
Do	Jan. 4-Mar. 14	1,344		
Newcastle-on-Tyne	Jan. 18-Feb. 21	9		
Do	Mar. 1-7	1		
Greece				January-June, 1924: Cases, 170; deaths, 27.
Do				July-December, 1924: Cases, 38; deaths, 26.
Saloniki	Nov. 11-Dec. 22	3		
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 12,564; deaths, 2,857.
Bombay	Nov. 2-Jan 3	30	18	Jan. 4-24, 1925: Cases, 7,921; deaths, 1,642
Do	Jan. 4-Feb 14	160	90	
Calcutta	Oct. 26-Jan. 8	307	170	
Do	Jan 4-Feb. 14	803	491	Mar. 5, 1925: Epidemic.
Karachi	Nov 16-Jan. 3	16	2	
Do	Jan 4-Feb. 14	52	6	
Do	Feb. 22-28	13	6	
Madras	Nov. 16-Jan. 3	122	48	
Do	Jan. 4-Feb. 21	379	114	
Rangoon	Oct. 26-Jan 3	86	28	
Do	Jan. 4-Feb. 7	287	49	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 223; deaths, 76.
Province—				
Anam	Aug. 1-Sept. 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov 16-Jan 3	17	5	Including 100 sq. km. of surrounding country.
Do	Jan. 4-10	3	1	Do
Do	Jan. 25-31	5	2	
Tonkin	Aug 1-Sept. 30	19	7	
Iraq	June 29-Dec 13	137	66	
Bagdad	Nov. 9-Dec. 27	2	1	
Italy				June 29-Dec 27, 1924: Cases, 63.
Jamaica				Nov. 30, 1924-Jan. 3, 1925: Cases, 50. Reported as alastrim.
Do				Jan. 4-31, 1925: Cases, 43. Reported as alastrim.
Kingston	Nov. 30-Dec 27	4		Reported as alastrim.
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Nagasaki	Feb. 9-15	3		
Taiwan	Jan. 1-31	1		
Java:				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in 2 native villages.
Soerabaya	Oct. 19-Dec. 31	685	212	
Do	Jan. 15-28	171	23	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 10, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Java—Continued				
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov. 14	2		
Do	Dec. 20-Jan. 2	19	4	
Buitenzorg	Dec. 25-31	1		Batavia Residency.
Cheribon	Oct. 14-Nov. 24	15		
Do	Jan. 1-7	2		Cheribon Residency.
Pekalongan	Oct. 14-Nov. 24	22		
Do	Dec. 25-31	3		Province.
Pemalang	Jan. 8-14	1		Pekalongan Residency.
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5.
Lithuania				Jan. 1-31, 1925: Cases, 2.
Mexico:				
Durango	Dec. 1-31		5	
Do	Jan. 1-Feb. 28		10	
Guadlajara	Dec. 23-29		1	
Do	Jan. 6-Mar. 23		4	
Mexico City	Nov. 23-Dec. 27	5		
Do	Jan. 11-Feb. 14	9		
Monterey				Jan. 24, 1925: Outbreak. Mar. 14, 1925, present.
Salina Cruz	Dec. 1-31	1	1	
Saltillo	Feb. 22-28		1	
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-Mar. 20	51	16	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan. 5-Mar. 22		36	
Villa Hermosa	Dec 28-Jan. 10			Present. Locality, capital, State of Tobasco.
Nigeria				January-June, 1924: Cases, 357; deaths, 87.
Do				July-November, 1924: Cases, 87; deaths, 25.
Persia:				
Teheran				Sept. 23-Dec 21, 1924: Deaths, 12
Peru:				
Arequipa	Nov. 21-30		1	
Poland				Sept. 21-Dec. 28, 1924. Cases, 30; deaths, 2.
Portugal:				
Lisbon	Dec. 7-Jan. 3	17		
Do	Jan. 4-Mar. 14	78	7	
Oporto	Nov. 30-Dec. 27	3	2	
Do	Jan. 11-Mar. 14	3		
Russia				January-June, 1924. Cases, 9,683; July-September, 1924: Cases, 1,251.
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan. 18-Feb. 14		12	
Sierra Leone:				
Freetown	Feb. 7-14	2		From S. S. Elmina.
Spain:				
Barcelona	Nov. 27-Dec 31		5	
Cadiz	Nov. 1-Dec 31		51	
Do	Jan 1-31		9	
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-Mar. 14		81	
Valencia	Nov. 30-Dec. 6	2		
Do	Feb. 15-Mar. 7	3		
Switzerland:				
Lucerne	Nov. 1-Dec. 31	19		
Do	Jan. 1-31	24		
Syria				
Aleppo	Nov. 23-Dec. 27	13		
Do	Jan. 4-Feb. 28	71	18	
Damascus	Jan. 6-13	2		
Tripoli:				
Tripoli	July 14-Dec. 12	52		
Tunis:				
Tunis	Nov. 25-Dec. 20	42	35	
Do	Jan. 1-Mar. 18		227	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 10, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Turkey:				
Constantinople	Dec. 13-19	5		
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 14.
Cape Province	Feb. 1-7			Outbreaks
De Aar District	Jan. 25-31			Outbreak at railway camp.
Do	Nov. 9-Jan. 17			Outbreaks.
Orange Free State	Nov 2-8			Do.
Ladybrand District	Jan. 15-31			Outbreak, on farm.
Transvaal	Nov. 9-Jan. 10			Do
Do	Feb. 1-7			Outbreaks.
Uruguay				January-June, 1924: Cases, 101; deaths, 2.
Do				July-October, 1924: Cases, 45; deaths, 4.
On vessel:				
S. S. Eldridge	Mar 23	1		At Port Townsend, from Yokohama and ports.
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica
S. S. Ruyth				At St Malo, France, Jan., 1924, from Sfax, Tunis; believed to have imported smallpox infection.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924; Cases, 101; deaths, 14.
Algiers	Nov 1-Dec 31	5	1	
Do	Jan. 1-Feb. 28	8	4	
Argentina:				
Rosario	Jan 1-31		1	
Bolivia.				
La Paz	Nov 1-Dec 31	3		
Do	Jan. 1-31	2		
Bulgaria				January-June, 1924: Cases, 191; deaths, 28
Do				July-October, 1924: Cases, 5.
Chile:				
Concepcion	Nov 25-Dec. 1		1	
Do	Jan. 6-12		2	
Do	Jan 27-Feb 2		1	
Iquique	Nov 25-Dec. 1		2	
Do	Feb 1-7		1	
Talcahuano	Nov 16-Dec. 20		5	
Do.	Jan 4-10		1	
Valparaiso	Nov 25-Dec. 7		4	
Do	Jan 11-Feb 21		10	
Chosen:				
Seoul	Nov. 1-30	1	1	
Czechoslovakia				December, 1924 Cases, 5.
Egypt:				
Alexandria	Dec 3-9	1	1	
Cairo	Oct 1-Dec. 23	13	8	
Esthonia				Dec 1-31, 1924 Cases, 5.
France				July-October, 1924. Cases, 7.
Gold Coast				Oct. 1-31, 1924. 1 case.
Greece				May-June, 1924. Cases, 110; deaths, 8.
Do				July-December, 1924: Cases, 40; deaths, 4.
Saloniki	Nov 17-Dec. 15	3	2	
Do	Jan. 25-31	1		
Japan				Aug. 1-Nov. 15, 1924: Cases, 2.
Latvia				October-December, 1924: Cases, 30.
Lithuania				August-October, 1924: Cases, 15; deaths, 1.
Do				Jan. 1-31. 1925: Cases, 27; deaths, 2.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 10, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Mexico:				
Durango	Dec. 1-31		1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District.
Do	Jan. 11-Feb. 14	40		Do.
San Luis Potosi	Mar. 8-14		1	
Morocco				November, 1924: Cases, 5.
Palestine				Nov. 12-Dec. 8, 1924: Cases, 7.
Ekron	Dec. 23-29	1		
Jerusalem	do	2		
Do	Jan. 20-26	1		
Mikveh Israel	do	1		
Ramleh	Feb. 10-16	1		
Tiberias	Feb. 24-Mar. 2	2		
Peru:				
Arequipa	Nov. 24-30		1	
Poland				Sept. 28, 1924-Jan. 3, 1925: Cases, 751; deaths, 57.
Portugal:				
Lisbon	Dec. 29-Jan. 4		2	
Oporto	Jan. 4-Feb. 7	2		
Rumania				January-June, 1924: Cases, 2,906; deaths, 328.
Do				July-August, 1924. Cases, 89; deaths, 12.
Constanza	Dec. 1-10	1		
Do	Feb. 1-28	2		
Russia				Jan 1-June 30, 1924: Cases, 92,000. July-September, 1924: Cases, 5,225.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Sweden:				
Goteborg	Jan. 18-24	1		
Tunis				July 1-Dec 20, 1924 Cases, 40.
Tunis	Mar. 5-11	1		
Turkey:				
Constantinople	Nov. 15-Dec. 19	6	1	
Do	Jan. 2-Feb. 28	8	1	
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 345; deaths, 87.
Cape Province	Nov. 1-Dec 31	126	24	
Do	Feb. 1-7			Outbreaks.
East London	Nov. 16-22	1		
Do	Jan. 18-24	1		
Natal	Nov. 1-Dec. 31	130	50	
Do	Jan. 18-24			Do.
Orange Free State	Nov 1-Dec. 31	59	8	Jan. 11-17: Outbreaks.
Transvaal	do	30	5	
Yugoslavia				Aug. 3-Oct. 18, 1924: Cases, 17; deaths, 2.
Belgrade	Nov. 24-Dec. 28	5		

YELLOW FEVER

Gold Coast	October-November, 1924.	4	4	
Salvador:				
San Salvador	June-October, 1924	77	28	Last case, Oct. 22, 1924.

X

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SPECIAL ARTICLES

Viability of B. Typhosus in Stored Shell Oysters
The Classification of Causes of Sickness
Current World Prevalence of Disease

WASHINGTON
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1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

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PUBLIC HEALTH REPORTS

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VIABILITY OF B. TYPHOSUS IN STORED SHELL OYSTERS

By CONRAD KINYOUN, Assistant Bacteriologist, Hygienic Laboratory, United States Public Health Service

The object of this work was to determine whether oysters contaminated with *B. typhosus* and then stored under usual market conditions would remain potentially infectious over a length of time sufficient to allow them to reach the consumer. Conflicting opinions are now current as to the length of time the causative agent of typhoid fever can remain viable in the oyster, and even as to whether the oyster can harbor the organisms at all. Obviously an oyster which harbors typhoid organisms for as short a time as 24 hours becomes a potential infecting agent for that time. Practically it is of interest to know whether the time elapsing between the removal of the oyster from the bed and actual consumption after passing through customary commercial channels is sufficient for oysters to rid themselves of possible infection.

As early as 1603, oysters were incriminated in intestinal disorders, when suspicion was directed toward them by an illness of Henry IV of France (7). It was not until the close of the nineteenth century, however, that oysters and shellfish as agents of disease transmission received particular attention. In October, 1894, Conn focused attention on the oyster by his investigation of the now famous Wesleyan outbreak, and though only three outbreaks of typhoid fever were definitely traced to the oyster before 1925, these stimulated wide interest and consequent study, with attendant epidemiological and bacteriological investigations.

It is agreed that the medium of infection of oysters with *B. typhosus* is water; but there is a wide divergence of opinion upon the viability of the organisms in water. De Giaxa (12) found numerous typhoid bacilli nine days after inoculation in ordinary sea water and 25 days after inoculation in sterilized sea water. He made no examinations later than these. Cassedebot, quoted by Frankland (1), found the typhoid organisms destroyed in sterilized sea water within 48 hours. Frankland (1) found 1 per cent and 3 per cent salt water prejudicial to typhoid. Foote (2) concludes that even in extremely cold weather, typhoid bacilli will live in unsterilized brackish water (0.06 to 0.15 per cent salt) at least eight days, while in warmer

water they rapidly diminish in numbers and can not be detected after three weeks. Herdman and Boyce (3) conclude that typhoid bacilli will not flourish in clean salt water. Klein, quoted by Reille (7), states that according to his experiments sea water is favorable to the survival of typhoid, and Reille (7) corroborates this finding. Burdoni et al., quoted by Conn (10), "proved the typhoid bacillus would live in sea water for 14 days." De Freytag (11) found that the typhoid bacillus would live in concentrated salt and gelatin solution for five months, but not six months, at room temperature.

To check the viability of the cultures used in the present experiment, flasks containing 500 c. c. of 3.5 per cent and 30 per cent salt water were sterilized, then inoculated with a half slant each of the Rawling and the Hopkins strains of *B. typhosus* and kept at room temperature. From day to day 0.1 c. c. from each flask was transferred to Endo plates and glucose broth fermentation tubes; and when growth resulted, it was proved to be *B. typhosus*. This test showed that in 3.5 per cent sterilized salt water the organisms remained viable during the course of the experiment—15 days—while in the 30 per cent salt *B. typhosus* was not proved after 24 hours.

As to viability in the oyster itself, Harrington (13) cites the conclusion of Polak that during transportation the life processes of the oyster have an inimical influence upon bacteria, diminishing their number and, in certain cases, destroying them entirely; but Harrington states that this conclusion is opposed to that of others who had found that the typhoid fever organisms live longer in the tissues and juice of the oyster than in the sea water. Field (6) cites experiments showing that many oysters are damaged and destroyed during storage and transportation, thus affording a favorable medium for the multiplication of typhoid organisms.

Previous laboratory work gives a range of infection lasting from eight days to six weeks. Foote (2) stated that, with oysters kept at a temperature ranging from 50° to 65° F. (10° to 18.3° C.), the typhoid organism lives longer in the stomach and in the juice of the oyster than it does in the water in which the oyster grows, and that if there is an increase in organisms this increase takes place within the first two weeks, after which there is a decrease, but that the typhoid bacillus may be found even 30 days after the date of infection. Boyce and Herdman (4) recovered typhoid organisms 14 days after infection; Field (5, 6) 9 days after infection, and from 4 to 6 weeks if oysters were cooled; Reille (7) from 9 to 28 days; Klein from 7 to 11 days; Stiles (8) from 7 to 21 days.

Park (14) states that infection is transitory and that oysters usually cleanse themselves in from 6 to 8 days. Gorham (9) gave an opinion, based on the seasonal counts, that oysters hibernate.

Following this suggestion as to oyster hibernation, the New York City health department showed that infection did not occur in hibernating oysters when the surrounding water had 13,000 typhoid bacilli per c. c. Pease, quoted by Park (14), states that at 2.2° C. oysters close their shells so tightly as to be impervious to particles of dyes in aqueous solution.

The oysters used in the tests here reported were of a large salt-water variety, tonged from Tangier Sound in the Chesapeake Bay and brought to Washington by power boat. By the time they had reached Washington they had been out of water eight days. Two bushels were purchased on February 4, 1925, brought to the Hygienic Laboratory, and stored outdoors for the night.

The following morning they were brought inside and cleaned roughly by scrubbing with brush and cold tap water. They were then placed in 6 large glass aquarium jars, each containing about 16 liters of sterilized tap water to which 3.5 per cent sodium chloride C. P. had been added. The amount of water was sufficient to cover the oysters generously. Air was passed through this water in a slow stream, allowing ample aeration. After two hours, when the temperature in the jars ranged from 24° to 28° C., they were each inoculated with two-thirds of a liter of 24-hour bouillon culture. The inoculum consisted of 2 liters each of Rawlings and Hopkins strains of *B. typhosus*. Previous to inoculation it was noticed that the oysters had opened their shells. Six in each jar were tested for viability. On slight stimulation all closed their shells. During the night, air was passed through the water every two hours for 10 minutes. Cultural checks were made of the cultures used for inoculation.

After 24 hours' feeding, the oysters were taken from the aquariums, drained, and placed in galvanized-iron buckets. One portion was placed in a laboratory cold room, which is maintained at 10° C., and the other portion, covered with ice, was placed outdoors. The latter was re-iced daily. During the test the mean daily outside temperature ranged from 27° F. to 58° F. (−2.8° C. to 14.4° C.), with an average of 43° F. (6.1° C.).

From day to day individuals from each lot were opened and cultured. Opening was preceded by flaming the shell thoroughly with a Bunsen burner, prying the shell apart with a flamed oyster knife, and cutting the attachment muscle of the right shell. Cultures were obtained from the shell liquid with a pipette, and from the stomach by searing, dissecting out and opening the stomach, and culturing with a loop, all under aseptic conditions.

The cultures were made on Endo plates, from which colonies were fished to Russell's double sugar medium, and to glucose broth fermentation tubes. These presumptive tests were followed by testing

motility, agglutinating power and indol production, action upon gelatin, and fermentation reactions upon levulose, sorbitol, dulcitol, lactose, salicin, inositol, and dextrine. Unless an organism reacted typically to all these criteria, it was not considered to be *B. typhosus*. Motility was observed from 24-hour broth cultures, which were also used for agglutinating tests. The latter were performed on microscopic slides by adding a drop of culture to a dilution of monovalent serum. Indol production was tested by moistening the plugs of control tubes on each culture with a concentrated solution of oxalic acid. Enlows' medium was used for the fermentation reactions. Adequate controls on all media and reactions were run.

No attempt was made to estimate the number of typhoid colonies quantitatively on the plates from day to day. It was noticed, however, that from a very large number at the first, there was no appreciable diminution until after the eighth day. On the fifteenth day the typhoid-like colonies had decreased to approximately one-fourth the original concentration.

Of the total number of colonies on the plates, it was noticed that the rate of reduction in those from the stomach was faster than in those from the shell liquid. In the 296 Endo plates made, colonies similar to those of *B. Coli* were encountered in seven instances.

The experiment was terminated on the fifteenth day of storage, because it was found that some of the oysters stored at 10° C. were dying, or were in a damaged state. Those iced, although in good condition, were becoming bloated from drinking melted ice. Either of these conditions would cause oysters to be unmarketable; and as a considerable proportion of oysters are eaten within 15 days after being dredged, it is believed that the results obtained are of practical value.

The accompanying table gives a summary of the work done. It will be noticed that occasionally there is a plate which had no typhoid-like colonies upon it, and also that typhoid was not proved in every instance where a colony was fished. During the latter part of the work, there was an increasing number of colonies which, although resembling typhoid on Endo medium, and not producing gas in glucose broth, either failed to give characteristic fermentation reactions, or liquified gelatin. The possibility of encountering such organisms led to placing reliance not upon the presumptive tests but wholly upon the confirmatory tests.

Summary of daily tests

Number of days stored	10° C.					Iced [— 2.8° C. to 14.4° C.]				
	Number opened	Number of fishings made	Proved B typhosus	Occurrence of colon-like colonies on plates	Plates with no typhoid-like colonies	Number opened	Number of fishings made	Proved B typhosus	Occurrence of colon-like colonies on plates	Plates with no typhoid-like colonies
1	5	28	28			0	0	0		
2	5	21	21			2	9	8		
3	4	18	17		1	2	8	7		1
4	4	15	15		1	2	6	6		
5	4	16	13			2	8	8		
6	4	16	16			2	8	8		
7	4	16	10			2	8	8		
8	4	16	10			2	8	7		
10	4	16	15			2	8	8		
11	4	15	12			2	6	2	1	2
13	4	15	13	3		2	7	5	3	1
14	2	8	6			2	8	6		
15	2	8	6			2	7	2		

SUMMARY

Oysters were aroused from hibernation, fed with *B. typhosus*, and then stored. *B. typhosus* was being recovered 15 days after the oysters had been fed with the organism, when the tests were discontinued.

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THE CLASSIFICATION OF CAUSES OF SICKNESS

An informal committee was called a few months ago by the National Industrial Conference Board, through Mr. Magnus W. Alexander, president, to consider the question of a standard classification of diseases which cause disabling sickness among industrial workers. The result of this work was a tentative list of diseases which is based upon the International List of Causes of Death. This list is being submitted to various organizations and agencies interested.

The fact that an increasing number of industrial plants and other organizations are recording the sickness which occurs among the workers has, it is realized, made desirable a greater uniformity in the manner in which the diseases are classified and made available for general use in studies of morbidity and industrial hygiene. Investigations have shown that even when reliable records of sickness are kept by industrial medical departments, in many instances there is no common basis for comparison on account of the diverse methods and practices employed in the classification of ailments causing disability. This question has been discussed at several meetings of various organizations interested; and the committee, called together under the auspices of the National Industrial Conference Board, was informally composed of representatives of a number of these organizations. The membership was as follows:

Mr. H. N. Dambmann, National Safety Council.
Dr. William H. Davis, Bureau of the Census.
Dr. Louis I. Dublin, American Statistical Association.
Dr. R. S. Quinby, American Association of Industrial Physicians and Surgeons.
Dr. F. L. Rector, Conference Board of Physicians in Industry.
Mr. Edgar Sydenstricker, United States Public Health Service.
Dr. Wade Wright, Industrial Hygiene Section, American Public Health Association.

At its first meeting the committee was organized with Doctor Rector as secretary and Mr. Sydenstricker as chairman. The following subcommittee was appointed to prepare a tentative morbidity classification based on the International List of the Causes of Death (third revision):

Mr. Dean K. Brundage, United States Public Health Service, chairman.
Mr. George H. Van Buren, Metropolitan Life Insurance Co.
Mr. J. O. Spain, Bureau of the Census.

It will be noted that this list follows closely the terminology and the titles used in the International List and is, of course, subject to the same criticisms. Its purpose, however, was not to revise the International List, but merely to specify under the various titles already used in the List those causes and conditions which are most

frequently encountered in the sickness experience of industrial employees. The report of the committee is published herewith as submitted for criticism and suggestions.

The committee, having accomplished the preliminary work for which it was called, passed a resolution requesting that the continuation of the work be under the Public Health Service. In accordance with this request, the Statistical Office of the Public Health Service, in cooperation with others who are interested, has begun the preparation of a manual of the causes and conditions of disability and will prepare reports from time to time on the progress of the work.

LIST OF DISEASES AND PATHOLOGICAL CONDITIONS FOR INDUSTRIAL MORBIDITY STATISTICS[1]

I. Epidemic, endemic, and infectious diseases:
  1. Typhoid and paratyphoid fevers (1).
  2. Malaria (5).
  3. Influenza (11).
  4. Other epidemic and endemic diseases (2–4, 6–10, 12–25).[2]
  5. Tuberculosis (all forms)—
     a. Tuberculosis of the respiratory system (31).
     b. Other forms of tuberculosis (32–37).
  6. Venereal diseases—
     a. Syphilis—
        1. Syphilis, so reported (38).
        2. Locomotor ataxia and general paralysis of the insane (72 and 76).
     b. Chancroid (39).
     c. Gonorrhea (all forms) (40).
  7. Purulent infection, septicemia (41).[3]
  8. Other infectious diseases, exclusive of those under 4—
     a. Anthrax (27).
     b. Other diseases in this group (26, 28–30, 42).[2]

II. General diseases not included in Class I:
  1. Cancer and other malignant tumors, all forms and sites (43–49).
  2. Benign tumors and tumors not reported as malignant (50)—[4]
     a. Nonmalignant.
     b. Unqualified.
  3. Rheumatism—[5]
     a. Acute rheumatic fever (51).
     b. Chronic rheumatism, osteoarthritis, gout (52).

[1] Figures in parentheses represent corresponding title numbers from the International List of Causes of Death, third revision, Paris, 1920.

[2] Should any of the diseases included in this group indicate marked prevalence, they should be shown separately.

[3] When not due to an accident.

[4] This title does not include tumors of the female genital organs, tumor of the brain, tumor of the thyroid gland, tumor of the prostate, etc. (See "tumor" in index of the Manual of the International List of Causes of Death, third revision, p. 292.)

[5] Illness due to rheumatism is subdivided into acute and chronic, in accordance with the detailed International List of the Causes of Death. Probably so many cases will be reported as due to "rheumatism" without any qualification that it will be impracticable to determine which of the two conditions actually caused the illness; but inasmuch as acute rheumatic fever, a disease which has epidemic prevalence, differs so markedly from arthritis deformans, a disease of the joints of doubtful etiology, which ordinarily pursues a chronic course, it is felt that the subdivision should be maintained, and an effort made to obtain the information necessary for the proper classification of rheumatism. If it is found to be impracticable in certain instances to obtain this information, it is recommended that rheumatism, unqualified, be placed in subdivision "a" (acute rheumatism) in accordance with the International List. This title does not include "muscular rheumatism."

II. General diseases not included in Class I—Continued.
4. Alcoholism, acute or chronic (66).
5. Chronic poisoning—
   a. Inorganic (67).
   b. Organic substances (68).[6]
6. Other general diseases (53–65, 69).[7]

III. Diseases of the nervous system and of the organs of special sense:
1. Neuralgia, neuritis, hysteria (82)—[8]
   a. Neuralgia.
   b. Neuritis.
   c. Sciatica.
   d. Migraine.
   e. Hysteria.
   f. Others under this title.
2. Other diseases of the nervous system—
   a. Functional nervous disorders, such as neurasthenia, nervous prostration, nervousness, etc. (84).
   b. Others under this title (70, 71, 73–75, 77–81, 83).[9]
3. Diseases of the eye and annexa (85)—
   a. Conjunctivitis.
   b. Eyestrain.
   c. Foreign body in the eye.
   d. Others under this title.[10]
4. Diseases of the ear (86a)—
   a. Earache.
   b. Otitis media.
   c. Others under this title.
5. Diseases of the mastoid process (86b).

IV. Diseases of the circulatory system:
1. Diseases of the heart (87–90).
2. Diseases of the arteries (91)—
   a. Arteriosclerosis (91b).
   b. Others under this title (91a and 91c).
3. Diseases of the veins (93)—
   a. Hemorrhoids.
   b. Phlebitis.
   c. Varicose veins.
   d. Others under this title.
4. Diseases of the lymphatic system (94)—
   a. Adenitis and swollen glands.[11]
   b. Others under this title.
5. Hemorrhage without specified cause (95)—
   a. Epistaxis.
   b. Others under this title.

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[6] Included under this title are all poisonings other than those of a sudden, accidental character. (See International List, titles 175–177 and 181.)

[7] Should any of the diseases included in this group indicate marked prevalence, they should be shown separately.

[8] Hysteria appears to be out of place in this title, but inasmuch as it is included with neuralgia and neuritis in the International List of the Causes of Death, it was deemed advisable to keep it in the same place in this list, and to show the number of such cases by providing subtitle "e".

[9] Titles 72 and 76 in the International List (locomotor ataxia, and general paralysis of the insane) should be added to title 38 (syphilis).

[10] Should trachoma or certain other diseases of the eye show marked prevalence, subdivisions should be added for these diseases.

[11] Include abscesses of the axilla, groin, cervical, and other lymphatic glands.

IV. DISEASES OF THE CIRCULATORY SYSTEM—Continued.
- 6. Other diseases of the circulatory system (92, 96)—
  - *a.* High-blood pressure (96).
  - *b.* Others under this title (92, 96).

V. DISEASES OF THE RESPIRATORY SYSTEM:
- 1. Diseases of the nasal fossae and their annexa (97)—
  - *a.* Coryza, rhinitis, and "cold" (unqualified).
  - *b.* Sinusitis.
  - *c.* Others under this title.
- 2. Diseases of the larynx (98)—
  - *a.* Laryngitis.
  - *b.* Others under this title.
- 3. Bronchitis (99)—
  - *a.* Acute, excluding capillary bronchitis (see V4a).
  - *b.* Chronic.
  - *c.* Unspecified.
- 4. Pneumonia (all forms) (100, 101)—
  - *a.* Broncho-pneumonia, including capillary bronchitis (100).
  - *b.* Lobar pneumonia (101a).
  - *c.* Other forms of pneumonia, including pneumonia unspecified (101b).
- 5. Pleurisy (102).
- 6. Asthma (105).
- 7. Other diseases of the respiratory system (tuberculosis excepted)—
  - *a.* Pneumoconiosis (107a).[12]
  - *b.* Cough, unqualified (107c).
  - *c.* Hay fever (107c).
  - *d.* Others under this title (103, 104, 106, 107).

VI. DISEASES OF THE DIGESTIVE SYSTEM:
- 1. Diseases of the mouth and annexa (108)—
  - *a.* Toothache (unqualified).
  - *b.* Abscessed tooth.
  - *c.* Pyorrhea alveolaris.
  - *d.* Other conditions of the teeth or gums.
  - *e.* Canker of mouth (unqualified).
  - *f.* Others under this title.
- 2. Diseases of the pharynx and tonsils (109)—
  - *a.* Diseases of the pharynx.
  - *b.* Diseases of the tonsils.
  - *c.* Sore throat (unqualified).
  - *d.* Streptococcic sore throat.
  - *e.* Others under this title.
- 3. Diseases of the stomach (111, 112)—
  - *a.* Gastric and duodenal ulcer.
  - *b.* Gastritis.
  - *c.* Dyspepsia and indigestion (unqualified).
  - *d.* Nervous indigestion.
  - *e.* Nausea, vomiting.
  - *f.* Stomach trouble (unqualified).
  - *g.* Others under this title.
- 4. Diarrhea and enteritis (114).
- 5. Appendicitis (117).

[12] This includes fibrosis, silicosis, and other changes produced by dust and other irritating agents.

VI. Diseases of the digestive system—Continued.

6. Hernia, intestinal obstruction (118)—[13]
   a. Hernia.
   b. Intestinal obstruction (organic obstructions only).
7. Other diseases of the intestines—
   a. Constipation (119).
   b. Others under this title (115, 116, 119).
8. Diseases of the liver and gall bladder—
   a. Jaundice (124).
   b. Cholecystitis (124).
   c. Gallstones (123).
   d. Others under this title (120–124).
9. Peritonitis without specified cause (126).
10. Other diseases of the digestive system (110, 125, 127)—
   a. "Cramps." [14]
   b. Others under this title.

VII. Nonvenereal diseases of the genito-urinary system and annexa:

1. Nephritis, acute and chronic—
   a. Acute (128).
   b. Chronic, including unspecified (129).
2. Diseases of the bladder (133)—
   a. Cystitis.
   b. Others under this title.
3. Nonpuerperal diseases of the female genital organs—
   a. Menstrual disorders (140, 141).
   b. Others under this title (137–141).
4. Other nonvenereal diseases of the genito-urinary system and annexa (130–132, 134–136, 142).

VIII. The puerperal state (143–150).

IX. Diseases of the skin and of the cellular tissue:

1. Furuncle (152).
2. Abscess, unqualified (153).
3. Acne (154).
4. Dermatitis venenata (154).
5. Eczema (154).
6. Herpes zoster (154).
7. Impetigo contagiosa (154).
8. Pruritus (154).
9. Urticaria (154).
10. Ulcer, unqualified (154).
11. Others under this title (151, 153, 154).

X. Diseases of the bones and of the organs of locomotion:

1. Diseases of the bones, tuberculosis excepted (155).
2. Diseases of the joints (tuberculosis and rheumatism excepted) (156).
3. Amputations (157).

[13] When not due to an external cause.

[14] A report of "cramps" in a male generally means, it is believed, some stomach or intestinal disturbance which rightly belongs under diseases of the digestive system instead of under convulsions, as given in the International List In fatal cases, however, "cramps" should be allocated to the convulsions title. Cramps due to menstrual disorders should be classified under VII, 3a.

X. DISEASES OF THE BONES AND OF THE ORGANS OF LOCOMOTION—Continued.

4. Other diseases of the organs of locomotion (158)—
   a. Bursitis.
   b. Flat foot.
   c. Lumbago.
   d. Myalgia, including "stiff neck," etc.
   e. Myositis.
   f. Others under this title.

XIV.[15] EXTERNAL CAUSES:

A. Accidents, occupational—
   1. Accidental burns, conflagration (178, 179).
   2. Accidental asphyxiation by poisonous gas or vapor (181).
   3. Accidental cuts or punctured wounds (184).
   4. Accidental falls (185).
   5. Excessive cold (193).
   6. Excessive heat (194).
   7. Fractures, sprains, luxations (201).
   8. Other external causes:
      a. Infected wound (202).
      b. All others (165–174, 177, 180, 182, 183, 186–192, 195–200, 202, 203).

B. Accidents, nonoccupational or unqualified—
   1. Poisoning by food (175):
      a. Ptomain poisoning.
      b. Others under this title.
   2. Other acute accidental poisonings (gas excepted) (176, 177):
      a. Ivy poisoning (177).
      b. Others under this title (176, 177).
   3. Accidental burns, conflagration (178, 179).
   4. Accidental asphyxiation by poisonous gas or vapor (181).
   5. Accidental cuts or punctured wounds (184).
   6. Accidental fall (185).
   7. Excessive cold (193).
   8. Excessive heat (194).
   9. Fractures, sprains, luxations (201).
   10. Other external causes:
      a. Infected wound (202).
      b. All others (165–174, 180, 182, 183, 186–192, 195–200, 202, 203).

XV. ILL-DEFINED AND UNKNOWN CAUSES (205):

1. Headache.
2. Exhaustion.[16]
3. Backache.
4. Biliousness.
5. Fever.
6. Fainting.
7. Dizziness.
8. Other ill-defined conditions.
9. Cause unknown.

XVI. ALL OTHER CAUSES (159–164, 204).

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[15] Groups XI and XII are omitted because they are diseases and conditions of no industrial importance. Group XIII is omitted because "old age" is rarely reported as a cause of disability on account of the fact that there are very few really old persons in industry. It is felt that senility could just as well be classified as "general debility" in the ill defined group.

[16] Including debility, weakness, fatigue, overwork, general run-down condition, and the like

CURRENT WORLD PREVALENCE OF DISEASE

REVIEW OF THE MONTHLY EPIDEMIOLOGICAL REPORT FOR MARCH 15, 1925, ISSUED BY THE HEALTH SECTION OF THE LEAGUE OF NATIONS' SECRETARIAT[1]

Although influenza outbreaks occurred in many countries during January and February, "the type has usually been mild and the mortality inconsiderable," states the Epidemiological Report issued March 15 at Geneva by the Health Section of the League of Nations' Secretariat. In addition to the considerable prevalence of the disease in Western Europe, previously mentioned, outbreaks are reported from Moscow, Japan, and the United States. All of these outbreaks have been mild and there were no indications that more serious epidemics were developing.

The outbreak of epidemic hiccough in Denmark, referred to last month, continued in January, with 368 cases reported as compared with 344 cases in December. Reports from the city of Copenhagen show that the maximum occurred there in December, and no case was reported in the second half of February.

Lethargic encephalitis.—A slight but gradual increase in the number of cases of lethargic encephalitis was indicated in the reports for England and Wales during January and February; 231 cases were notified in February and 194 in the preceding four weeks. In Scotland, the report for 16 towns gives 31 cases in the four weeks ended March 7 as compared with 17 cases in the preceding four weeks. Some cases were reported from a number of countries in Europe, notably Sweden, Denmark, the Netherlands, Belgium, and Czechoslovakia, where from 10 to 20 cases were notified in January.

Plague.—The high prevalence of plague in the central provinces of Java has been mentioned in previous reports. A sharp increase in the number of reported deaths occurred in November and December. For the first three weeks of December the deaths from plague in Java numbered 2,091—about 1,000 more than had been recorded in any four-week period since the introduction of plague on the island in 1911. The Provinces of Soerakarta, Kedu, and Banjumas are the most severely affected.

Deaths from plague in Java, July 15 to December 22, 1924

Four-week period	Number of deaths	Four-week period	Number of deaths
July 15-Aug 11	704	Oct. 7-Nov. 3	1,369
Aug 12-Sept. 8	844	Nov. 4-Dec. 1	1,984
Sept. 9-Oct. 6	1,187	Dec. 2-22 [1]	[1] 2,091

[1] Three weeks only.

Plague continued to increase in India during December and the beginning of January; the total number of deaths reported was, however, approximately the same as at the corresponding date a

[1] From the Statistical Office, United States Public Health Service.

year ago. Where individual provinces are considered, it is seen that while the disease was less prevalent than a year ago in Bombay, Bihar and Orissa, and particularly Burma, it was more prevalent in the Punjab and the United Provinces.

The plague incidence in most of its endemic areas in Africa is low and on the decline. In the Union of South Africa, where about the same number of cases have been reported each month for several months, 26 cases were notified from February 1 to 25. No new case of plague was reported in January in the Gold Coast and no case was notified in Egypt from January 22 to March 5. No country on the Mediterranean reported a case of plague during the month between the publication of the February and March Epidemiological Reports.

Recent reports from Ecuador indicate an increase in plague in Guayaquil.

Cases of plague reported in Guayaquil, Ecuador

Half-month	Number of cases
Dec 1-15	2
Dec 16-31	1
Jan. 1 15	6
Jan 16-31	11
Feb. 1-15	14

Cholera.—The total number of cases of cholera reported in India at the beginning of January exceeded the number reported at the same date a year ago. The excess was entirely due to the high prevalence in Madras, where over half of the cases occurred. The only other province with a high prevalence was Bengal, where it was declining and was less than in the previous year. "A recrudescence of the disease may be expected in March," states the Report.

Typhus and relapsing fever.—"The incidence of typhus in Eastern Europe" according to the Report, "is lower than during any preceding winter since the war." Excepting Russia, Poland has had the greatest number of cases, where in the first five weeks of 1925, 611 cases were notified, as compared with 978 and 1,849 cases, respectively, in the corresponding periods of 1924 and 1923.

Cases of typhus and relapsing fever reported in Russia, 1923-1924

Month	Typhus		Relapsing fever	
	1923	1924	1923	1924
January	56,123	15,675	69,401	7,648
February	46,157	18,950	47,111	6,960
March	41,156	20,240	36,848	5,341
April	30,598	17,210	25,478	5,124
May	25,445	15,457	19,990	3,949
June	11,801	8,150	12,694	2,644
July	6,268	4,570	11,009	3,049
August	4,086	2,931	10,398	2,653
September	3,517	2,347	7,564	2,248
October	4,288	[1] 1,944	7,296	[1] 1,370
November	4,969	[1] 1,877	5,338	[1] 583
December	7,882	[1] 4,227	5,169	[1] 776

[1] Incomplete.

Smallpox.—Very few cases of smallpox were reported by most of the European countries for January or February. The disease continued to spread in England and Wales, and during the four weeks ended February 21, 593 cases were reported, compared with 416 cases the preceding four weeks. A new outbreak of smallpox was reported in Switzerland, chiefly in the Canton of Lucerne. During February, 78 cases were notified, and 26 in the preceding four weeks. In Spain a considerable increase in mortality from smallpox during the autumn and early winter is shown. In December, 252 deaths were reported, compared with 59 deaths in December, 1923.

Smallpox has been declining steadily in Russia, the number of cases in European Russia (exclusive of the Ukraine) declined from slightly over 2,800 per month in February and March to 436 cases in August. The autumn recrudescence has been slight and only 624 cases were reported for November, though this figure is probably somewhat incomplete.

Scarlet fever.—The prevalence of scarlet fever in most European countries was somewhat lower in January and February than in the months of November and December.

In Russia scarlet fever has been extensively prevalent, with an incidence about twice that of 1923. In July the number of cases began increasing, and in October, 18,551 cases were notified in European Russia exclusive of the Ukraine. In November and December the number seems to have declined somewhat, but returns were still incomplete.

Measles.—The incidence of measles was not high in most countries, and, indeed, was unusually low in several, as, for example, Denmark and the United States. On the other hand, Hungary reported an increased incidence in January, when 4,696 cases were notified, in comparison with 1,977 cases in January, 1923. Also in France and Italy the disease was somewhat more prevalent than in the previous winter. The rather serious epidemic in Leningrad referred to in the previous report continued into February, with 775 cases and 64 deaths in the three weeks ended February 14, and 965 cases and 63 deaths the preceding three weeks.

DIGEST OF CURRENT PUBLIC HEALTH COURT DECISIONS

Interference with local health officer in performance of his duties.—(Oklahoma Criminal Court of Appeals.) A person was charged with obstructing a local health officer in the performance of his duties regarding the control of rabies. The statute conferring authority on the local health officer contained nothing specific relative to rabies control, but by inference gave the State board of health power to adopt

regulations. It was not alleged that the State board of health had promulgated any rules relative to animals afflicted with rabies. The court held that in order to sustain the prosecution the written accusation should aver that the State board of health had promulgated some rule concerning rabies and that the accused had interfered with the operation of such rule sought to be enforced by the local health officer. (Shilkett *v.* State, 232 Pac. 127.)

Secretary of city board of health held to occupy an "office."—(New Jersey Court of Errors and Appeals.) The secretary of the board of health of the city of Bayonne, an honorably discharged soldier, was removed from his office contrary to the provisions of a 1922 State law restricting the removal of an ex-service person holding a position or office under the State or municipal government. The removed secretary brought a proceeding to determine title to the office. It was contended against him that the position of secretary was not an office within the meaning of the act relating to such a proceeding as he had brought, and was not a position or office within the meaning of the law restricting the removal of ex-service persons. The court held that the position of secretary was an office within the meaning of both acts and that the person removed was rightfully entitled to the office. (Brodman *v.* Rade, 127 Atl. 249.)

Statute prohibiting sale of under-weight calves construed.—(Massachusetts Supreme Judicial Court.) The defendant slaughtered and dressed 126 calves. The head, hide, feet, and intestines were removed from each carcass, but the pluck (heart, liver, lungs, and windpipe), shins, sweetbread, and tail were retained. An inspector of the local board of health was present when the calves were slaughtered. Each carcass was weighed and the inspector stamped each one with his official stamp. Two days later the carcasses were taken to another place, the pluck, shins, sweetbread, and tail having been removed. When delivered, 15 were found to weigh less than 40 pounds and were seized and condemned as being under-weight. Section 1 of chapter 329, Statutes of 1908 (now section 138 of chapter 94, General Laws), prohibited "the sale, offer or exposure for sale, or delivery for use as food, of the carcass, or any part or product thereof, * * * of any calf weighing less than 40 pounds when dressed, with head, feet, hide, and entrails removed." The court held that the words "when dressed" in the statute fixed a time rather than stated a condition and meant at the time at which a calf is slaughtered and dressed. The word "entrails" was held to mean intestines and not to include the pluck and sweetbread. (Commonwealth *v.* Cohen, 146 N. E. 228.)

DEATHS DURING WEEK ENDED APRIL 11, 1925

Summary of information received by telegraph from industrial insurance companies for week ended April 11, 1925, and corresponding week of 1924. (From the Weekly Health Index, April 14, 1925, issued by the Bureau of the Census, Department of Commerce.)

	Week ended April 11, 1925	Corresponding week, 1924
Policies in force	59, 365, 205	55, 584, 062
Number of death claims	11, 270	11, 906
Death claims per 1,000 policies in force, annual rate	9. 9	11. 2

Deaths from all causes in certain large cities of the United States during the week ended April 11, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, April 14, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Apr. 11, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Apr. 11, 1925[2]
	Total deaths	Death rate[1]		Week ended Apr 11, 1925	Corresponding week, 1924	
Total (64 cities)	7, 350	13. 9	[3] 14. 6	830	[3] 954	
Akron	33			6	11	66
Albany[4]	38	16 6	16. 7	5	1	111
Atlanta	68	15. 3	21. 3	8	10	
Baltimore[4]	228	14. 9	15. 9	25	30	73
Birmingham	82	20. 8	17. 1	6	7	
Boston	263	17. 5	17. 3	38	34	101
Bridgeport	28			4	4	64
Buffalo	173	16. 3	12. 7	28	15	114
Cambridge	43	19. 9	13 5	3	2	52
Camden	30	12 2	20 2	2	8	33
Chicago[4]	711	12 4	12 5	107	102	95
Cincinnati	118	15 0	16 1	9	10	53
Cleveland	223	12 4	11. 7	21	41	52
Columbus	83	15 8	13 2	8	4	75
Dallas	55	14. 8	13 6	10	4	
Dayton	39	11. 8	10. 5	0	5	0
Denver	102			10	9	
Des Moines	42	14 7	14. 0	6	1	103
Detroit	255			41	59	69
Duluth	27	12. 7	9. 1	4	5	85
Erie	26			0	5	0
Fall River[4]	31	13. 3	14. 6	10	9	144
Flint	24			2	11	33
Fort Worth	27	9. 2	14. 4	2	3	
Grand Rapids	36	12. 5	14. 8	7	7	109
Houston	50			6	3	
Indianapolis	110	16. 0	15 1	8	10	55
Jacksonville, Fla	30	14 9	18 3	3	4	67
Jersey City	75	12. 4	16 7	9	16	63
Kansas City, Kans	35	14. 7	12 4	3	3	63
Kansas City, Mo	125	17. 7	16. 7	12	18	
Los Angeles	250			27	33	75
Louisville	91	18 3	16 5	8	6	70
Lowell	32	14. 3	12 6	4	5	70
Lynn	41	20 4	13. 1	5	3	133
Memphis	76	22 7	18. 2	11	6	
Milwaukee	140	14. 6	11. 1	12	22	55
Minneapolis	126	15. 4	16. 2	10	21	53
Nashville[4]	51	21. 4	16. 5	5	3	
New Bedford	30	11. 6	11. 8	7	6	116
New Haven	43	12. 5	16. 0	4	7	52
New Orleans	151	19. 0	16 8	13	12	

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924 Cities left blank are not in the registration area for births.
[3] Data for 63 cities
[4] Deaths for week ended Friday, Apr. 10, 1925.

Deaths from all causes in certain large cities of the United States during the week ended April 11, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924—Continued

City	Week ended Apr. 11, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended Apr. 11, 1925
	Total deaths	Death rate		Week ended Apr. 11, 1925	Corresponding week, 1924	
New York	1,494	12.8	14.1	203	205	81
Bronx Borough	157	9.1	12.0	17	20	59
Brooklyn Borough	527	12.3	13.3	78	78	82
Manhattan Borough	631	14.6	16.0	83	94	83
Queens Borough	133	12.1	11.1	19	9	94
Richmond Borough	46	17.9	19.5	6	4	108
Newark, N. J	103	11.9	12.9	5	11	23
Norfolk	29	8.9	8.9	4	3	71
Oakland	60	12.3	12.7	4	2	47
Oklahoma City	18	8.8	16.0	2	2	
Omaha	65	16.0	15.5	7	13	67
Paterson	30	11.0	12.2	2	5	34
Philadelphia	514	13.5	16.0	53	68	67
Pittsburgh	187	15.4	20.3	20	32	70
Portland, Oreg	76	14.0	15.6	6	5	62
Providence	58	12.3	20.1	6	14	48
Richmond	59	16.5	16.2	10	7	121
Rochester	91	14.3		9		71
St. Louis	246	15.6	17.0	13	41	
St. Paul	70	14.8	14.3	5	9	43
Salt Lake City [4]	30	12.0	11.0	2	2	31
San Antonio	58	15.3	19.6	9	15	
San Francisco	142	13.3	15.0	7	9	40
Schenectady	25	12.8	12.5	1	4	28
Seattle	62			8	8	82
Somerville	33	16.9	7.8	7	2	187
Spokane	40			3	5	65
Springfield, Mass	27	9.2	15.5	3	6	45
Syracuse	55	15.0	16.9	8	8	101
Tacoma	16	8.0	12.1	0	3	0
Toledo	76	13.8	13.2	5	10	45
Trenton	40	15.8	14.9	2	6	32
Washington, D. C	142	14.9	13.2	10	21	56
Waterbury	23			1	4	22
Wilmington, Del	23	9.8	9.1	2	1	46
Worcester	58	15.2	11.2	6	3	69
Yonkers	26	12.1	13.8	3	1	66
Youngstown	26	8.5	15.8	3	6	38

[4] Deaths for week ended Friday, Apr. 10, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended April 18, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	3
Chicken pox	79
Dengue	1
Diphtheria	8
Dysentery	4
Influenza	221
Malaria	27
Measles	12
Mumps	48
Ophthalmia neonatorum	1
Pellagra	14
Pneumonia	120
Scarlet fever	21
Smallpox	97
Trachoma	3
Tuberculosis	40
Typhoid fever	12
Whooping cough	20

ARIZONA

	Cases
Chicken pox	5
Diphtheria	1
Measles	12
Mumps	12
Pneumonia	1
Scarlet fever	5
Smallpox	2
Trachoma	2
Tuberculosis	50
Whooping cough	9

ARKANSAS

	Cases
Chicken pox	4
Diphtheria	4
Hookworm disease	3
Influenza	167
Malaria	58
Measles	24
Mumps	36
Pellagra	13
Scarlet fever	7
Smallpox	5
Trachoma	1
Tuberculosis	3
Whooping cough	12

CALIFORNIA

	Cases
Cerebrospinal meningitis—Los Angeles County	1
Diphtheria	66
Influenza	38
Jaundice (epidemic)—San Francisco	1
Leprosy—San Francisco	1
Lethargic encephalitis:	
Bakersfield	1
Berkeley	1
San Diego	1
Measles	64
Poliomyelitis—Alhambra	1
Scarlet fever	80
Smallpox:	
Oakland	8
San Diego	29
Sutter County	11
Tulare County	15
Scattering	44
Typhoid fever	10

COLORADO

(Exclusive of Denver)

	Cases
Anthrax	2
Cerebrospinal meningitis	1
Chicken pox	7
Diphtheria	10
Measles	1
Mumps	8
Pneumonia	15
Scarlet fever	20
Tuberculosis	18
Typhoid fever	2
Whooping cough	8

CONNECTICUT

	Cases
Cerebrospinal meningitis	1
Chicken pox	70
Diphtheria	47
German measles	43
Influenza	12
Lethargic encephalitis	1
Measles	313
Mumps	54

CONNECTICUT—continued

	Cases
Paratyphoid fever	1
Pneumonia (all forms)	99
Poliomyelitis	1
Scarlet fever	100
Septic sore throat	1
Tuberculosis (all forms)	43
Whooping cough	124

DELAWARE

Chicken pox	2
Malaria	3
Measles	9
Mumps	2
Pneumonia	2
Scarlet fever	2
Tuberculosis	5
Whooping cough	2

FLORIDA

Chicken pox	19
Diphtheria	10
Influenza	2
Malaria	20
Measles	9
Mumps	127
Pneumonia	3
Scarlet fever	5
Smallpox	1
Tuberculosis	26
Typhoid fever	26
Whooping cough	10

GEORGIA

Chicken pox	43
Conjunctivitis (infectious)	2
Dengue	1
Diphtheria	13
Dysentery	10
Hookworm disease	2
Influenza	400
Malaria	46
Measles	10
Mumps	119
Pellagra	16
Pneumonia	134
Scarlet fever	10
Septic sore throat	16
Smallpox	10
Tetanus	1
Tuberculosis	23
Typhoid fever	7
Whooping cough	48

ILLINOIS

Cerebrospinal meningitis:	
Lake County	1
Woodford County	1
Diphtheria:	
Cook County	67
Scattering	20
Influenza	89
Lethargic encephalitis:	
Cook County	1
Piatt County	1
Measles	1,326
Pneumonia	386

ILLINOIS—continued

	Cases
Scarlet fever:	
Cook County	267
Jackson County	9
Kane County	8
McLean County	9
Madison County	13
Schuyler County	10
Scattering	114
Smallpox.	
Alexander County	12
Macon County	20
Union County	17
Scattering	33
Tuberculosis	256
Typhoid fever	10
Whooping cough	253

INDIANA

Chicken pox	58
Diphtheria	29
Influenza	216
Measles	100
Mumps	1
Ophthalmia neonatorum	1
Pneumonia	21
Scarlet fever	
Allen County	15
Clark County	17
Delaware County	18
Elkhart County	41
Lake County	18
Marion County	12
Vermilion County	9
Scattering	94
Smallpox	56
Tuberculosis	45
Typhoid fever	6
Whooping cough	28

IOWA

Diphtheria	10
Scarlet fever	31
Smallpox	9

KANSAS

Cerebrospinal meningitis	2
Chickenpox	93
Diphtheria	17
German measles	2
Influenza	36
Lethargic encephalitis	1
Measles	17
Mumps	237
Pneumonia	78
Scarlet fever	84
Smallpox	10
Tuberculosis	60
Vincent's angina	1
Whooping cough	39

LOUISIANA

Diphtheria	15
Hookworm disease	21
Influenza	37
Leprosy	1
Malaria	2
Pellagra	16

LOUISIANA—continued

	Cases
Pneumonia	47
Scarlet fever	7
Smallpox	26
Tuberculosis	29
Typhoid fever	18
Whooping cough	38

MARYLAND [1]

	Cases
Cerebrospinal meningitis	1
Chicken pox	89
Diphtheria	40
German measles	3
Influenza	77
Malaria	1
Measles	34
Mumps	66
Pneumonia (all forms)	108
Poliomyelitis	1
Scarlet fever	71
Septic sore throat	2
Smallpox	2
Tuberculosis	102
Typhoid fever	4
Whooping cough	81

MASSACHUSETTS

	Cases
Cerebrospinal meningitis	4
Chicken pox	134
Conjunctivitis (suppurative)	15
Diphtheria	72
German measles	218
Influenza	32
Lethargic encephalitis	1
Measles	802
Mumps	81
Ophthalmia neonatorum	29
Pneumonia (lobar)	141
Scarlet fever	226
Septic sore throat	1
Smallpox	1
Tetanus	1
Trachoma	5
Tuberculosis (all forms)	154
Typhoid fever	12
Whooping cough	131

MICHIGAN

	Cases
Diphtheria	65
Measles	222
Pneumonia	152
Scarlet fever	336
Smallpox	25
Tuberculosis	83
Typhoid fever	8
Whooping cough	151

MINNESOTA

	Cases
Cerebrospinal meningitis	2
Chicken pox	100
Diphtheria	44
Influenza	7
Lethargic encephalitis	1
Measles	29
Pneumonia	11
Poliomyelitis	1
Scarlet fever	210
Smallpox	22

[1] Week ended Friday.

MINNESOTA—continued

	Cases
Tuberculosis	61
Typhoid fever	1
Whooping cough	13

MISSISSIPPI

	Cases
Cerebrospinal meningitis	1
Diphtheria	14
Smallpox	20
Typhoid fever	7

MISSOURI

(Exclusive of Kansas City)

	Cases
Chicken pox	85
Diphtheria	48
Influenza	46
Measles	17
Mumps	83
Pneumonia	69
Scarlet fever	357
Smallpox	12
Tetanus	2
Trachoma	1
Tuberculosis	100
Typhoid fever	5
Whooping cough	44

MONTANA

	Cases
Chicken pox	4
Diphtheria	5
German measles	31
Measles	10
Mumps	4
Rocky Mountain spotted fever:	
Billings R. F. D.	1
Bonita	1
Bridger	1
Fromberg	1
Ismay	1
Missoula R. F. D.	3
Scarlet fever	25
Smallpox	3
Tuberculosis	4
Typhoid fever	1
Whooping cough	5

NEW JERSEY

	Cases
Anthrax	1
Cerebrospinal meningitis	5
Chicken pox	150
Diphtheria	87
Influenza	43
Measles	330
Pneumonia	208
Scarlet fever	319
Smallpox	3
Trachoma	1
Typhoid fever	5
Whooping cough	249

NEW MEXICO

	Cases
Chicken pox	4
Conjunctivitis	3
Influenza	2
Measles	13
Mumps	7
Pneumonia	7
Scarlet fever	7
Trachoma	1
Tuberculosis	31
Whooping cough	12

NEW YORK

(Exclusive of New York City)

	Cases
Cerebrospinal meningitis	3
Diphtheria	83
Influenza	62
Lethargic encephalitis	2
Measles	496
Pneumonia	323
Poliomyelitis	1
Scarlet fever	287
Typhoid fever	19
Whooping cough	188

NORTH CAROLINA

Chicken pox	164
Diphtheria	23
German measles	8
Measles	26
Scarlet fever	19
Septic sore throat	5
Smallpox	57
Typhoid fever	4
Whooping cough	113

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Chicken pox	13
Diphtheria	3
Influenza	186
Measles	1
Mumps	4
Pneumonia	71
Scarlet fever	16
Smallpox	5
Typhoid fever	6
Whooping cough	21

OREGON

Cerebrospinal meningitis	4
Chicken pox	14
Diphtheria:	
Portland	11
Scattering	7
Influenza	85
Measles	5
Mumps	16
Pneumonia	[1] 10
Scarlet fever:	
Portland	13
Scattering	9
Smallpox	2
Tuberculosis	6
Typhoid fever	1
Whooping cough	18

SOUTH DAKOTA

Chicken pox	1
Influenza	2
Measles	1
Mumps	1
Pneumonia	17
Scarlet fever	31
Smallpox	11

[1] Deaths.

TEXAS

	Cases
Cerebrospinal meningitis	1
Chicken pox	61
Diphtheria	21
Dysentery (epidemic)	4
Influenza	62
Measles	28
Mumps	88
Ophthalmia neonatorum	1
Pellagra	3
Pneumonia	14
Poliomyelitis	2
Scarlet fever	10
Smallpox	31
Tuberculosis	79
Typhoid fever	15
Typhus fever	1
Whooping cough	11

VERMONT

Chicken pox	20
Diphtheria	5
Measles	3
Mumps	27
Scarlet fever	21
Typhoid fever	2
Whooping cough	1

VIRGINIA

Lethargic encephalitis—Chesterfield County	1
Smallpox—Fairfax County	1

WASHINGTON

Cerebrospinal meningitis:	
Spokane	3
Clarke County	1
Lewis County	1
Chicken pox	80
Diphtheria	17
German measles	33
Measles	4
Mumps	128
Pneumonia	2
Poliomyelitis—Whatcom County	1
Scarlet fever	22
Smallpox	30
Tuberculosis	25
Typhoid fever	3
Whooping cough	120

WEST VIRGINIA

Diphtheria	1
Scarlet fever	19
Smallpox	6
Typhoid fever	2

WISCONSIN

Milwaukee:	
Chicken pox	31
Diphtheria	19
German measles	208
Influenza	3
Measles	202
Mumps	59
Pneumonia	105
Scarlet fever	22
Smallpox	10
Whooping cough	17

WISCONSIN—continued

Scattering:

	Cases
Chicken pox	70
Diphtheria	26
German measles	146
Influenza	444
Measles	251
Mumps	289
Pneumonia	36
Scarlet fever	105
Smallpox	14
Tuberculosis	22
Typhoid fever	4
Whooping cough	63

WYOMING

	Cases
Chicken pox	5
Measles	24
Mumps	13
Pneumonia	2
Rocky Mountain spotted fever	4
Scarlet fever	11
Whooping cough	7

Reports for Week Ended April 11, 1925

DISTRICT OF COLUMBIA

	Cases
Cerebrospinal meningitis	2
Chicken pox	13
Diphtheria	11
Measles	37
Pneumonia	33
Scarlet fever	18
Smallpox	6
Tuberculosis	24
Typhoid fever	2
Whooping cough	20

NEBRASKA

	Cases
Cerebrospinal meningitis	1
Chicken pox	11
Diphtheria	8
Measles	2
Mumps	1
Pneumonia	4
Poliomyelitis	1
Scarlet fever	12
Smallpox	31
Tuberculosis	8
Whooping cough	6

NORTH DAKOTA

	Cases
Chicken pox	8
Diphtheria	4
German measles	1
Influenza	17
Mumps	9
Pneumonia	5
Scarlet fever	47
Smallpox	4
Tuberculosis	1
Whooping cough	34

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

	Cases
Chicken pox	24
Diphtheria	17
Influenza	210
Pneumonia	89
Scarlet fever	35
Smallpox	12
Typhoid fever	9
Whooping cough	20

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
February, 1925										
Hawaii		24	10		47					8
March, 1925										
Arizona	1	14	154		291			43	4	2
Louisiana	2	78	799	33	5	19	0	83	141	47
Michigan		340	71		782		3	1,717	80	37
Missouri	6	305	377	5	59		2	1,226	75	23
Oklahoma	19		2,792	81	85	17	2		176	48
Vermont		8			51			100		5
West Virginia	3	62	224		177			199	104	40

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended April 4, 1925:

Los Angeles, Calif.

Week ended Apr. 4, 1925:	
Number of rats examined	5, 290
Number of rats found to be plague-infected	10
Number of squirrels examined	599
Number of squirrels found to be plague-infected	0
Totals to Apr. 4, 1925:	
Number of rats examined	76, 481
Number of rats found to be plague-infected	169
Number of squirrels examined	6, 583
Number of squirrels found to be plague-infected	9

Date of discovery of last plague-infected rodent, Apr. 20, 1925.
Date of last human case, Jan. 15, 1925.

Oakland, Calif.

(Including other East Bay communities)

Week ended Apr. 4, 1925:	
Number of rats trapped	2, 865
Number of rats found to be plague-infected	0
Totals to Apr. 4, 1925:	
Number of rats trapped	32, 582
Number of rats found to be plague-infected	21

Date of discovery of last plague-infected rat, Mar. 4, 1925.
Date of last human case, Sept. 10, 1919.

New Orleans, La.

Week ended Apr. 4, 1925:	
Number of vessels inspected	397
Number of inspections made	1, 187
Number of vessels fumigated with cyanide gas	29
Number of rodents examined for plague	4, 847
Number of rodents found to be plague-infected	0
Totals to Apr. 4, 1925:	
Number of rodents examined for plague	70, 511
Number of rodents found to be plague-infected	12

Date of discovery of last plague-infected rat, Jan. 17, 1925.
Date of last human case occurring in New Orleans, Aug. 20, 1920.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended April 4, 1925, 34 States reported 1,473 cases of diphtheria. For the week ended April 5, 1924, the same States reported 1,695 cases of this disease. One hundred and three cities, situated in all parts of the country and having an aggregate population of nearly 28,700,000, reported 980 cases of diphtheria for the week ended April 4, 1925. Last year for the corresponding week they reported 1,034 cases. The estimated expectancy for these

cities was 985 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Twenty-nine States reported 4,686 cases of measles for the week ended April 4, 1925, and 17,504 cases of this disease for the week ended April 5, 1924. One hundred and three cities reported 3,084 cases of measles for the week this year, and 6,029 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 34 States—this year, 4,306 cases; last year, 3,914; 103 cities—this year, 2,260; last year, 1,735; estimated expectancy, 1,076 cases.

Smallpox.—For the week ended April 4, 1925, 33 States reported 865 cases of smallpox. Last year, for the corresponding week, they reported 1,407 cases. One hundred and three cities reported smallpox for the week as follows; 1925, 308 cases; 1924, 543 cases; estimated expectancy, 107 cases. These cities reported 11 deaths from smallpox for the week this year.

Typhoid fever.—Two hundred and four cases of typhoid fever were reported for the week ended April 4, 1925, by 33 States. For the corresponding week of 1924 the same States reported 245 cases. One hundred and three cities reported 44 cases of typhoid fever for the week this year, and 49 cases for the corresponding week last year. The estimated expectancy for these cities was 49 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 103 cities as follows: 1925, 1,277 deaths; 1924, 1,330 deaths.

City reports for week ended April 4, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	9	2	0	2	0	0	22	3
New Hampshire:									
Concord	22,408	0	0	0	0	0	0	0	7
Manchester	81,383	0	2	1		2	6	0	2

City reports for week ended April 4, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND—contd.									
Vermont:									
Barre	[1] 10,008	1	0	0	0	0	0	0	0
Burlington	23,613	2	1	0	0	0	14	23	1
Massachusetts:									
Boston	770,400	29	60	37	23	4	266	3	39
Fall River	120,912	7	3	0	5	2	0	0	8
Springfield	144,227	7	5	1	3	4	19	8	2
Worcester	191,927	22	5	9	3	0	28	1	13
Rhode Island.									
Pawtucket	68,799	1	1	0	0	0	3	0	5
Providence	242,378	3	11	10	8	2	2	0	10
Connecticut:									
Bridgeport	[1] 143,555	0	7	5	1	1	0	0	2
Hartford	[1] 138,036	3	8	7	0	1	2	8	6
New Haven	172,967	8	4	0	1	0	65	0	7
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	5	13	7	2	0	177	10	22
New York	5,927,625	196	241	311	79	23	184	36	230
Rochester	317,867	8	6	12	0	0	34	25	14
Syracuse	184,511	5	7	10	2	1	12	9	6
New Jersey									
Camden	124,157	9	4	3	0	0	12	0	1
Newark	438,699	20	18	17	14	0	34	13	17
Trenton	127,390	0	5	1	4	1	6	0	4
Pennsylvania:									
Philadelphia	1,922,788	70	75	98	......	3	448	31	52
Pittsburgh	613,442	48	20	15	......	10	478	24	76
Reading	110,917	17	3	2	......	3	65	13	2
Scranton	110,636	0	3	2	0	0	2	0	4
EAST NORTH CENTRAL									
Ohio.									
Cincinnati	406,312	10	10	3	......	11	1	4	20
Cleveland	888,519	37	25	16	......	5	6	2	23
Columbus	261,082	4	4	3	......	9	1	2	18
Toledo	268,338	17	4	5	4	2	72	2	6
Indiana:									
Fort Wayne	93,573	8	3	1	0	0	0	0	5
Indianapolis	342,718	9	9	0	......	4	1	44	24
South Bend	76,709	0	1	0	0	0	2	0	4
Terre Haute	68,939	0	1	0	0	0	8	0	2
Illinois:									
Chicago	2,886,121	68	102	55	73	16	599	28	96
Cicero	55,968	5	2	2	0	0	9	0	0
Springfield	61,833	10	1	2	2	0	2	56	3
Michigan:									
Detroit	995,668	30	52	20	5	4	5	13	41
Flint	117,968	2	4	4	0	0	5	0	2
Grand Rapids	145,947	8	3	1	1	1	51	1	5
Wisconsin:									
Madison	42,519	5	1	1	0	0	8	95	0
Milwaukee	484,595	33	14	14	1	1	269	98	0
Racine	64,393	8	1	3	1	0	25	6	0
Superior	[1] 39,671	1	1	0	0	0	0	0	2
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	4	1	0	0	0	0	0	2
Minneapolis	409,125	56	14	26	......	8	9	13	25
St. Paul	241,891	14	14	18	0	0	6	17	12
Iowa:									
Davenport	61,262	0	1	0	0	......	2	0	......
Sioux City	79,662	1	2	0	0	......	0	10	......
Waterloo	39,667	17	0	1	0	......	2	1	......
Missouri:									
Kansas City	351,819	9	8	3	8	8	4	14	23
St. Joseph	78,232	2	2	0	0	0	1	1	5
St. Louis	803,853	33	39	49	......	2	12	10	......

[1] Population Jan. 1, 1920.

City reports for week ended April 4, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CENTRAL—continued									
North Dakota:									
Fargo	24,841	1	1	0	0	0	0	11	0
Grand Forks	14,547	0	0	0	0		0	0	
South Dakota:									
Aberdeen	15,829	1		0	0		0	0	
Sioux Falls	29,206	1	0	1	0	0	0	0	0
Nebraska:									
Lincoln	58,761	6	2	1	0	0	4	3	2
Omaha	204,382	5	3	3	0	0	1	0	10
Kansas:									
Topeka	52,555	4	1	0	1	0	0	101	4
Wichita	79,261	17	1	5	0	0	2	2	7
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	4	2	2	0	0	15	0	1
Maryland:									
Baltimore	773,580	74	25	18	15	3	9	65	49
Cumberland	32,361		1	2		1	0		0
Frederick	11,301	1	0	0	0	0	0	0	1
District of Columbia:									
Washington	[1] 437,571	23	10	8	2	1	42		22
Virginia									
Lynchburg	30,277	3	1	2	0	0	0	22	2
Norfolk	159,089	23	1	0	0	0	4	58	3
Richmond	181,044	0	2	0		3	0	0	4
Roanoke	55,502	2	1	0	0	0	1	0	2
West Virginia.									
Charleston	45,597	8	1	0	0	0	23	0	0
Huntington	57,918	0	0	1	0		0	0	
Wheeling	[1] 56,208	4	2	0	0	0	4	0	6
North Carolina:									
Raleigh	29,171	8	0	1		1	0	22	3
Wilmington	35,719	2	0	0	0	0	0	0	2
Winston-Salem	56,230	0	0	1	0	0	5	5	2
South Carolina:									
Charleston	71,245	0	0	2		2	0	0	2
Columbia	39,688	4	1	1		1	0	1	0
Greenville	25,789	0	0	0	0	0	0	0	2
Georgia:									
Atlanta	222,963	0	2	1	3	0	0	2	9
Brunswick	15,937		1	0	2	0	0		0
Savannah	89,448	1	1	2	8	2	0	11	1
Florida.									
St. Petersburg	24,403	0	0	0	0	0	0	0	1
Tampa	56,050		1						
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	1	1	0	4	0	0	9	3
Louisville	257,671	3	5	3	6	0	0	0	8
Tennessee:									
Memphis	170,067		5						
Nashville	121,128	1	1	0		6	1	0	7
Alabama:									
Birmingham	195,901	11	2	1	9	5	2	9	17
Mobile	63,858	0	1	0	1	0	0	0	1
Montgomery	45,383	1	0	0	0	0	0	20	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	0	0	0	0		0	2	
Little Rock	70,916	1	1	1	7	0	11	0	4
Louisiana:									
New Orleans	404,575	3	9	11	7	2	0	0	11
Shreveport	54,590	5		0	0	0	0	0	9
Oklahoma:									
Oklahoma	101,150	6	1	1	0	0	0	0	8
Texas:									
Dallas	177,274	30	3	4		4	8	1	4
Galveston	46,877	0	0	0	0	0	0	0	0
Houston	154,970	6	2	1		1	0	0	0
San Antonio	184,727	4	2	1	0	0	0	1	5

[1] Population Jan. 1, 1920.

City reports for week ended April 4, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MOUNTAIN									
Montana:									
Billings	16,927	3	0	1	0	0	0	11	0
Great Falls	27,787	0	1	1	0	0	18	5	1
Helena	[1] 12,037	0	0	0	0	0	0	0	1
Missoula	[1] 12,668	0	1	2	0	0	0	0	0
Idaho:									
Boise	22,806	2	0	0	0	0	0	0	0
Colorado.									
Denver	272,031	17	9	7		18	5	72	9
Pueblo	43,519	4	2	0	2	1	0	2	3
New Mexico.									
Albuquerque	16,048	0	1	0	0	0	1	4	3
Arizona.									
Phoenix	33,899	0		1	0	0	3	0	7
Utah:									
Salt Lake City	126,241	16	2	2	0	0	0	27	3
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	44	5	8	0		9	65	
Spokane	104,573	6	2	58	0		0	0	
Tacoma	101,731	4	1	1		1	0	6	6
Oregon									
Portland	273,621	7	3	16	56	0	0	16	8
California									
Los Angeles	666,853	55	40	41	28	4	50	31	17
Sacramento	69,950		1	2	0	0	0		2
San Francisco	539,038	46	25	19	10	2	13	64	14

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	1	9	0	0	0	0	0	1	2	3	25
New Hampshire											
Concord	1	0	0	0	0	1	0	0	0	0	1
Manchester	2	9	0	0	0	0	0	0	0	0	18
Vermont:											
Barre	0	0	0	0	0	0	0	0	0	0	2
Burlington	1	0	0	0	0	0	0	0	0	1	5
Massachusetts.											
Boston	61	91	1	0	0	18	2	1	0	39	266
Fall River	3	6	0	0	0	1	0	0	0	1	50
Springfield	6	29	0	0	0	2	0	0	0	9	42
Worcester	8	18	0	0	0	3	0	0	0	7	63
Rhode Island:											
Pawtucket	1	2	0	2	0	2	0	0	0	0	17
Providence	9	14	0	3	0	8	1	0	0	0	83
Connecticut:											
Bridgeport	6	13	0	0	0	3	1	0	0	2	33
Hartford	6	7	0	0	0	0	0	0	0	7	39
New Haven	7	26	0	0	0	1	0	0	0	23	5[illegible]
MIDDLE ATLANTIC											
New York:											
Buffalo	19	31	0	2	0	6	1	0	0	28	144
New York	215	390	1	1	0	[2] 110	8	3	0	158	1,503
Rochester	13	77	0	0	0	3	0	0	0	10	83
Syracuse	15	5	0	0	0	1	0	0	0	1	42

[1] Population Jan. 1, 1920.

[2] Pulmonary tuberculosis only.

City reports for week ended April 4, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
MIDDLE ATLANTIC—continued											
New Jersey:											
Camden	3	31	0	21	3	2	1	0	0	3	27
Newark	24	40	0	0	0	6	0	0	0	87	109
Trenton	3	2	0	0	0	3	0	1	0	7	45
Pennsylvania:											
Philadelphia	72	176	1	17	1	47	3	4	0	77	527
Pittsburgh	19	78	0	0	0	12	1	0	0	14	233
Reading	4	31	0	0	0	0	0	0	0	6	36
Scranton	3	7	0	0	0	1	0	0	0	10	-------
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	11	16	2	0	0	4	1	1	1	2	158
Cleveland	31	20	0	0	0	15	2	0	0	24	205
Columbus	6	11	2	2	0	5	0	0	0	2	91
Toledo	13	23	3	0	0	6	1	1	0	14	74
Indiana:											
Fort Wayne	2	8	2	0	0	0	1	0	0	1	29
Indianapolis	11	4	2	8	0	5	0	0	0	26	101
South Bend	3	15	0	1	0	1	1	0	0	0	13
Terre Haute	2	3	0	1	0	0	0	0	0	0	32
Illinois:											
Chicago	84	286	3	1	0	51	2	3	0	138	806
Cicero	2	4	0	0	0	0	0	0	0	2	8
Springfield	1	4	1	0	0	0	0	0	0	0	23
Michigan:											
Detroit	76	121	5	0	0	25	2	1	0	58	305
Flint	7	0	1	0	0	0	0	0	0	2	23
Grand Rapids	8	75	1	2	1	1	0	0	0	1	34
Wisconsin:											
Madison	4	1	1	0	0	0	0	0	0	2	4
Milwaukee	32	15	1	17	1	0	1	0	0	55	134
Racine	5	2	0	0	0	0	0	0	0	0	16
Superior	2	11	3	0	0	1	1	0	0	0	6
WEST NORTH CENTRAL											
Minnesota:											
Duluth	5	24	2	0	0	3	0	0	0	0	23
Minneapolis	28	80	7	5	0	3	1	0	0	0	139
St. Paul	28	30	7	1	0	5	1	0	0	17	90
Iowa:											
Davenport	2	0	2	1	-------	-------	0	0	-------	0	-------
Sioux City	2	0	1	1	-------	-------	0	0	-------	0	-------
Waterloo	2	3	0	5	-------	-------	0	0	-------	0	-------
Missouri:											
Kansas City	11	89	3	1	0	6	0	1	0	8	118
St. Joseph	2	7	0	0	0	0	0	0	0	0	32
St. Louis	34	112	2	7	0	13	2	0	0	8	268
North Dakota:											
Fargo	2	1	0	0	0	0	0	0	0	5	8
Grand Forks	1	0	0	0	-------	-------	0	0	-------	0	-------
South Dakota:											
Aberdeen	-------	0	-------	0	-------	-------	-------	0	-------	0	-------
Sioux Falls	3	0	0	0	0	0	0	0	0	0	6
Nebraska:											
Lincoln	4	1	1	0	0	0	0	0	0	0	19
Omaha	4	4	2	21	0	3	0	0	0	0	62
Kansas:											
Topeka	2	5	1	1	0	0	0	0	0	0	24
Wichita	3	0	4	0	0	1	0	0	0	30	40
SOUTH ATLANTIC											
Delaware:											
Wilmington	2	2	0	0	0	1	1	2	0	0	28
Maryland:											
Baltimore	35	50	1	0	0	20	3	3	0	65	266
Cumberland	1	0	0	0	0	0	0	1	1	-------	11
Frederick	1	0	0	0	0	0	0	0	0	0	3

City reports for week ended April 4, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
SOUTH ATLANTIC—continued											
District of Col.:											
Washington	20	26	1	7	2	14	1	1	0	15	144
Virginia:											
Lynchburg	1	0	1	0	0	0	0	0	0	8	11
Norfolk	1	0	0	0	0	3	0	0	0	17	-------
Richmond	2	0	0	0	0	1	0	0	0	0	48
Roanoke	1	1	0	0	0	1	0	0	0	0	17
West Virginia:											
Charleston	0	1	0	0	0	0	0	1	0	2	8
Huntington	0	5	1	0	-------	-------	0	0	-------	0	-------
Wheeling	2	2	0	0	0	2	1	1	1	1	34
North Carolina:											
Raleigh	1	0	0	0	0	2	0	1	0	5	14
Wilmington	0	0	0	0	0	2	0	0	0	3	12
Winston-Salem	1	0	2	10	0	1	0	0	0	9	16
South Carolina:											
Charleston	0	0	0	1	0	6	0	0	0	1	35
Columbia	0	0	0	0	0	2	0	0	0	7	14
Greenville	0	0	1	6	0	0	0	0	0	0	9
Georgia:											
Atlanta	4	4	4	0	0	6	0	0	0	14	63
Brunswick	0	0	0	0	0	1	1	0	0	-------	6
Savannah	0	0	0	0	0	0	0	1	0	7	25
Florida:											
St. Petersburg	4	0	1	0	0	0	0	0	0	0	13
Tampa	0	-------	0	-------	-------	-------	1	-------	-------	-------	-------
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	2	0	0	0	0	1	0	0	0	15
Louisville	5	16	1	1	0	10	1	0	0	3	94
Tennessee:											
Memphis	3	-------	2	-------	-------	-------	0	-------	-------	-------	-------
Nashville	2	1	1	4	1	5	0	1	0	0	61
Alabama:											
Birmingham	1	22	1	55	1	8	0	2	0	2	76
Mobile	1	0	1	1	0	0	0	0	0	0	17
Montgomery	0	0	1	3	0	0	0	0	0	4	15
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	0	0	0	-------	-------	0	0	-------	2	-------
Little Rock	1	0	1	0	0	1	0	0	0	0	-------
Louisiana:											
New Orleans	4	7	5	0	0	11	2	7	0	5	144
Shreveport	-------	0	-------	4	0	2	-------	0	0	0	33
Oklahoma:											
Oklahoma	3	2	5	0	0	1	0	0	0	4	21
Texas:											
Dallas	2	4	4	1	0	2	0	0	0	1	54
Galveston	0	0	0	0	0	3	1	0	0	0	13
Houston	1	0	0	5	0	3	1	0	0	0	47
San Antonio	1	0	0	0	0	8	0	0	0	0	59
MOUNTAIN											
Montana:											
Billings	1	6	0	0	0	0	0	0	0	3	4
Great Falls	1	8	1	1	0	1	0	0	0	1	12
Helena	0	0	0	0	0	2	0	0	0	0	12
Missoula	1	0	1	0	0	0	0	0	0	0	5
Idaho:											
Boise	1	0	0	0	0	0	0	0	0	0	4
Colorado:											
Denver	11	9	3	0	0	10	0	0	0	6	104
Pueblo	1	0	0	0	0	0	0	0	0	1	8

City reports for week ended April 4, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
MOUNTAIN—con.											
New Mexico:											
Albuquerque	1	1	0	0	0	1	0	0	0	0	10
Arizona:											
Phoenix	------	1	------	0	0	9	------	0	0	2	29
Utah:											
Salt Lake City	3	4	2	0	0	2	0	0	0	2	21
Nevada:											
Reno	1	2	1	1	0	0	0	0	1	0	2
PACIFIC											
Washington:											
Seattle	9	14	2	18	------	------	0	0	------	60	------
Spokane	4	2	9	7	------	------	0	1	------	8	------
Tacoma	2	0	2	1	0	0	0	1	1	0	8
Oregon:											
Portland	6	12	5	4	0	3	0	0	0	20	------
California:											
Los Angeles	16	32	2	50	1	29	1	2	0	49	233
Sacramento	2	2	0	2	0	3	0	2	0	------	15
San Francisco	17	16	2	10	0	12	2	1	0	43	179

Division, State, and city	Cerebrospinal meningitis: Cases	Cerebrospinal meningitis: Deaths	Lethargic encephalitis: Cases	Lethargic encephalitis: Deaths	Pellagra: Cases	Pellagra: Deaths	Poliomyelitis (infantile paralysis): Cases, estimated expectancy	Poliomyelitis: Cases	Poliomyelitis: Deaths	Typhus fever: Cases	Typhus fever: Deaths
NEW ENGLAND											
Massachusetts:											
Boston	1	0	1	0	0	0	0	0	0	0	0
Springfield	0	0	1	1	0	0	0	0	0	0	0
Connecticut:											
Bridgeport	1	0	0	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC											
New York:											
New York	4	2	8	4	0	0	0	0	1	1	0
New Jersey:											
Newark	0	0	2	1	0	0	0	0	0	0	0
Trenton	1	0	0	0	0	0	0	0	0	0	0
Pennsylvania:											
Philadelphia	0	0	1	1	1	1	0	0	0	0	0
EAST NORTH CENTRAL											
Ohio:											
Columbus	0	0	0	1	0	0	0	0	0	0	0
Illinois:											
Chicago	0	2	3	2	0	0	1	0	0	0	0
Michigan:											
Detroit	1	0	2	0	0	0	0	1	0	0	0
WEST NORTH CENTRAL											
Minnesota:											
St. Paul	1	0	0	0	0	0	0	0	0	0	0
North Dakota:											
Grand Forks	0	0	0	0	0	0	0	1	0	0	0

City reports for week ended April 4, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	Cases	Deaths
SOUTH ATLANTIC											
Maryland:											
Baltimore	1	1	2	1	0	0	0	0	0	0	0
District of Columbia:											
Washington	0	0	1	1	0	0	0	1	0	0	0
North Carolina:											
Winston-Salem	0	0	0	0	0	1	0	0	0	0	0
South Carolina:											
Charleston	0	0	0	0	0	1	0	0	0	0	0
Columbia	0	1	0	0	0	0	0	0	0	0	0
Georgia:											
Atlanta	0	0	0	0	0	1	0	0	0	0	0
EAST SOUTH CENTRAL											
Tennessee:											
Nashville	0	1	0	0	1	1	0	0	0	0	0
Alabama:											
Birmingham	0	0	0	0	1	0	0	0	0	0	0
Montgomery	0	0	0	0	1	0	0	0	0	0	0
WEST SOUTH CENTRAL											
Arkansas:											
Little Rock	0	0	0	0	1	0	0	0	0	0	0
Louisiana:											
Shreveport	0	0	0	0	0	1	0	0	0	0	0
Oklahoma:											
Oklahoma	0	0	0	1	0	0	0	0	0	0	0
Texas:											
Houston	0	0	0	0	0	1	0	0	0	0	0
MOUNTAIN											
Nevada:											
Reno	0	1	0	0	0	0	0	0	0	0	0
PACIFIC											
Washington:											
Spokane	3	-------	0	-------	0	-------	0	0	-------	0	-------
Oregon:											
Portland	1	0	1	0	0	0	0	1	0	1	0
California:											
Los Angeles	1	0	0	0	0	0	0	0	0	0	0
Sacramento	0	0	0	0	0	1	0	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended April 4, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, January 25 to April 4, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4
Total	[2] 166	[3] 175	[3] 168	149	[4] 169	162	[5] 168	167	[6] 168	[7] 178
New England	199	191	246	241	[4] 189	233	176	147	119	171
Middle Atlantic	155	171	165	163	178	167	214	196	231	241
East North Central	[2] 135	145	132	123	119	114	128	134	112	93
West North Central	251	255	259	209	299	282	201	199	247	220
South Atlantic	128	[3] 153	[3] 183	156	114	104	[5] 93	136	95	[5] 83
East South Central	97	63	69	80	51	63	40	69	57	[8] 28
West South Central	148	176	162	125	162	144	158	97	121	83
Mountain	134	191	95	162	153	86	105	143	134	124
Pacific	293	270	180	165	258	235	197	249	[6] 179	374

MEASLES CASE RATES

	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4
Total	[2] 214	[3] 254	[3] 297	383	[4] 358	418	[5] 449	506	[6] 507	[7] 561
New England	484	576	661	720	[4] 585	656	542	725	755	957
Middle Atlantic	205	205	287	373	343	428	518	598	633	734
East North Central	[2] 373	453	515	688	632	789	740	775	798	736
West North Central	21	17	31	27	73	68	75	93	89	77
South Atlantic	37	[3] 49	[3] 98	110	81	100	[5] 150	189	136	[5] 214
East South Central	91	51	74	51	46	86	11	69	34	[8] 21
West South Central	14	37	51	14	51	23	88	42	9	88
Mountain	286	782	153	620	916	29	763	573	38	219
Pacific	17	61	29	64	61	107	110	189	[6] 151	209

SCARLET FEVER CASE RATES

	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4
Total	[2] 364	[3] 412	[3] 400	390	[4] 408	395	[5] 432	427	[6] 419	[7] 411
New England	534	614	564	606	[4] 558	584	534	544	604	534
Middle Atlantic	322	373	407	376	412	372	439	417	405	436
East North Central	[2] 379	426	397	432	434	433	497	498	483	442
West North Central	779	871	728	742	734	775	719	792	755	736
South Atlantic	185	[3] 255	[3] 277	167	203	171	[5] 224	146	167	[5] 179
East South Central	217	97	212	223	183	194	355	286	286	[8] 288
West South Central	204	162	121	125	144	185	107	134	102	51
Mountain	258	334	382	248	315	286	200	429	248	277
Pacific	226	258	177	186	223	218	229	218	[6] 222	191

SMALLPOX CASE RATES

	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4
Total	[2] 67	[3] 76	[3] 79	66	[4] 66	62	[5] 61	63	[6] 58	[7] 56
New England	0	0	0	0	[4] 0	0	0	0	0	12
Middle Atlantic	9	2	4	2	3	1	5	8	7	21
East North Central	[2] 35	39	35	56	28	42	39	32	33	24
West North Central	195	145	193	126	120	114	124	102	135	87
South Atlantic	45	[3] 62	[3] 98	67	43	51	[5] 60	57	67	[5] 50
East South Central	652	823	675	532	583	652	446	646	423	[8] 450
West South Central	60	125	139	83	116	74	74	107	107	46
Mountain	48	29	162	86	57	48	95	67	19	19
Pacific	177	267	220	215	313	206	247	212	[6] 191	256

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Racine, Wis., not included. Report not received at time of going to press.
[3] Wilmington, Del., not included.
[4] Hartford, Conn, not included.
[5] Tampa, Fla., not included.
[6] Spokane, Wash., not included.
[7] Tampa, Fla., and Memphis, Tenn., not included.
[8] Memphis, Tenn., not included.

Summary of weekly reports from cities, January 25 to April 4, 1925—Annual rates per 100,000 population—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4
Total	[2] 18	[3] 13	[3] 13	11	[4] 14	11	[5] 9	12	[6] 11	[7] 8
New England	7	30	20	0	[4] 13	7	5	30	12	5
Middle Atlantic	19	13	6	10	8	10	5	8	7	4
East North Central	[2] 10	8	6	6	7	11	4	7	3	4
West North Central	12	0	10	4	17	6	10	8	6	2
South Atlantic	37	[3] 17	[3] 34	8	20	8	[5] 21	22	12	[5] 23
East South Central	23	11	40	34	34	34	34	46	57	[8] 21
West South Central	60	23	46	42	42	28	28	23	42	32
Mountain	19	29	19	38	76	10	19	0	0	0
Pacific	3	17	12	23	9	15	15	0	[6] 28	20

INFLUENZA DEATH RATES

	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4
Total	[2] 23	[3] 30	[3] 28	30	[4] 34	30	[5] 34	42	33	[7] 34
New England	27	47	27	17	[4] 40	17	35	30	30	35
Middle Atlantic	16	24	22	21	20	15	24	29	22	21
East North Central	[2] 12	13	17	18	24	27	33	49	40	38
West North Central	15	20	11	22	37	35	33	42	46	39
South Atlantic	39	[3] 49	[3] 55	55	49	53	[5] 29	53	12	[5] 29
East South Central	74	69	63	74	126	103	91	120	86	[8] 77
West South Central	82	97	122	153	148	143	107	76	36	36
Mountain	38	57	57	57	19	19	48	48	38	181
Pacific	20	41	4	12	29	29	16	12	53	29

PNEUMONIA DEATH RATES

	Jan. 31	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4
Total	[2] 206	[3] 225	[3] 222	216	[4] 201	205	[5] 222	217	206	[7] 205
New England	241	211	239	241	[4] 242	226	229	211	219	251
Middle Atlantic	230	253	231	216	185	210	214	217	199	215
East North Central	[2] 145	164	168	184	171	195	241	222	214	182
West North Central	118	134	131	131	166	140	175	173	166	193
South Atlantic	252	[3] 315	[3] 270	252	305	268	[5] 241	290	252	[5] 233
East South Central	303	326	320	320	292	269	366	286	269	[8] 253
West South Central	229	352	464	408	260	229	178	178	168	168
Mountain	315	191	277	219	267	162	210	172	200	162
Pacific	217	196	192	213	163	139	155	131	159	159

[2] Racine, Wis., not included. Report not received at time of going to press.
[3] Wilmington, Del., not included.
[4] Hartford, Conn., not included.
[5] Tampa, Fla., not included.
[6] Spokane, Wash., not included.
[7] Tampa, Fla., and Memphis, Tenn., not included.
[8] Memphis, Tenn., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

CUBA

Deratization of arrivals from Tampico, Mexico.—Measures of deratization were ordered, April 7, 1925, to be enforced against arrivals from Tampico, Mexico, on account of the occurrence of rodent plague at that port.

INDIA

Epidemic smallpox—Rangoon.—Information received under date of February 20, 1925, shows the presence of smallpox in Rangoon, Burma, India, in epidemic form. During the month of January, 1925, 199 cases were reported, of which 26 were imported. It was stated that all preventive measures were being taken to check the spread of the disease, including appointment of an extra staff of vaccinators, examination of infected areas to discover and remove cases of smallpox, and an intensive campaign of vaccination and revaccination of persons living in infected areas or employed in workshops, factories, and schools.

Smallpox during the month of February, 1925.—During the week ended February 7, 1925, 91 cases of smallpox with 15 deaths, and during the two-week period ended February 28, 217 cases with 49 deaths were reported at Rangoon. Population, 356,556.

MADAGASCAR

Plague—February 1-15, 1925.—During the period February 1 to 15, 1925, 95 cases of plague with 83 deaths were reported in the island of Madagascar. The types of the disease were stated to be bubonic and septicemic. For distribution according to locality, see page 854.

MAURITIUS

Plague—Year 1924.—During the year 1924, 161 cases of plague with 144 deaths were reported in the island of Mauritius, 101 cases with 92 deaths being reported at Port Louis (population, 50,308). The period of greatest prevalence was for the months of October, November, and December, the greatest number of cases, viz, 44, with 40 deaths, being reported for the month of November. For further distribution according to period and locality, see page 854.

MEXICO

Rodent plague—Tampico.—Rodent plague was reported April 6, 1925, at Tampico, Mexico, occurring in rats found in the vicinity of the Government wharf.

PANAMA CANAL

Communicable diseases—February, 1925.—During the month of February, 1925, communicable diseases were reported in the Canal Zone and at Colon and Panama, as follows:

Disease	Canal Zone		Colon		Panama		Nonresident		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chicken pox	4		4		31		3		42	
Diphtheria	1		6		4				11	
Dysentery					2	1	2		3	1
Hookworm infection			5		31		4		40	
Leprosy			1						1	
Malaria	55		4		9	2	34	1	102	3
Measles	8		1		4		2		15	
Meningitis			1	1	3	3	1		5	4
Mumps	1						2		3	
Pneumonia			4	4	11	11	2	2	17	17
Poliomyelitis			1						1	
Scarlet fever					1				1	
Tuberculosis	2	2	6	5	26	22	5	1	39	30
Typhoid fever					1		1		2	
Whooping cough	4		9						13	

PARAGUAY

Quarantine station established at Humaita.—Information received under date of March 6, 1925, shows the establishment of a quarantine station at Humaita, Paraguay, at the junction of the Paraguay and Parana Rivers, for the inspection of vessels entering Paraguayan waters, and for disinfection and quarantine when required, the object being to guard against the importation of plague.

UNION OF SOUTH AFRICA

Plague—Plague-infected rodents—February 15–28, 1925.—Plague has been reported in the Union of South Africa as follows: Week ended February 21, 1925—Cape Province: One fatal case, native, occurring at a farm in Hanover District; infection was stated to exist in wild rodents on both sides the Vaal River, in a strip of country 10 miles wide and extending some miles east of Standerton; also in the Klip River valley, extending from near Roberts Drift to within about 10 miles from Volksrust. Week ended February 28, 1925—Orange Free State: Two fatal cases, in natives, on farms in Kroonstad District; in Senekal District, 1 fatal case, native, was reported, the case having occurred on February 3, 1925, and having been inadvertently omitted from the report covering that date.

Smallpox—Typhus fever—January, 1925.—During the month of January, 1925, smallpox and typhus fever were reported as follows in the Union of South Africa: Smallpox—4 cases occurring in the native population. Typhus fever—cases, 94; deaths, 12, occurring in the native population, with 2 cases in the white population. For distribution of occurrence according to locality, see page 855.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended April 24, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Feb. 8-14, 1925: Cases, 1,762; deaths, 1,081.
Calcutta	Mar. 1-7	19	16	
Madras	Mar. 2-8	2	1	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Brazil:				
Bahia	Jan. 4-Feb. 28	4	3	
British East Africa.				
Tanganyika	Jan 18-24	17	11	Subject to correction.
Uganda	Dec. 1-31	37	32	
Ceylon				
Colombo	Mar. 1-7		1	
China:				
Nanking	Feb. 22-Mar. 7			Present.
India				Feb. 8-14, 1925: Cases, 4,425; deaths, 3,682
Bombay	Feb 22-28	3	3	
Madagascar				Feb. 1-15, 1925: Cases, 95; deaths, 83.
Fort Dauphin (port)	Feb. 1-15	1	1	Bubonic
Itasy (province)	do.	1	1	Do.
Moramanga (province)	do	1	1	Do.
Tananarive (province)—				
Tananarive (town)	do	2	2	Septicemic.
Other localities	do	90	78	Bubonic and septicemic.
Mauritius				Year 1924. Cases, 161; deaths, 144.
District—				
Flacq	Dec. 1-31	5	4	
Pamplemousses	do	1	1	
Plaines Wilhems	Jan.-Dec	54	47	Not present March, April, May.
Port Louis	Feb -Dec	101	92	
Mexico:				
Tampico				Apr. 6, 1925: Plague rat found in vicinity of government wharf.
Straits Settlements.				
Singapore	Feb. 22-28	5	4	
Union of South Africa				Feb. 15-21, 1925: 1 case, 1 death. Feb. 22-28, 1925: Cases, 2. Additional case reported out of date.
Cape Province—				
Hanover District	Feb. 15-21	1	1	Plague infection in wild rodents on both sides of Vaal River.
Orange Free State—				
Kroonstad District	Feb. 22-28	2	2	Natives.
Senekal District	Feb. 3	1	1	Native. Delayed report.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended April 24, 1925—Continued

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Arabia:				
Aden	Mar. 15-21	1		
Bolivia				
La Paz	Feb. 1-28	5	2	
Brazil:				
Pernambuco	Feb. 15-28	17	7	
Bulgaria				
Sofia	Mar. 12-18	1		Varioloid.
Canada				
British Columbia—				
Vancouver	Mar 24-30	20		
Victoria	Mar. 28-Apr. 4	4		
China:				
Amoy	Mar. 1-7		3	Very prevalent in district.
Antung	Mar. 2-8	3		
Foochow	Feb. 22-28			Present.
Hongkong	Feb. 22-Mar 7	3	3	
Nanking	Feb. 28-Mar. 7			Present.
Colombia				
Santa Marta	Mar. 15-28			Present in mild form in localities in vicinity.
India				Feb. 8-14, 1925: Cases, 4,901; deaths, 985.
Bombay	Feb. 22-28	53	29	
Calcutta	Mar 1-7	280	200	Epidemic.
Karachi	Mar. 8-14	19	2	
Indo-China				
Saigon	Feb 8-21	19	4	Including 100 sq. km. of surrounding country.
Iraq				
Bagdad	Mar. 1-7	1		
Japan:				
Nagasaki	Mar. 8-22	4	2	
Java				
West Java—				
Cheribon	Jan 22-28	1		
Krawang	Jan. 15-21	1		
Latvia				Jan. 1-31, 1925: Cases, 5.
Mexico:				
Durango	Mar. 1-31		6	
San Luis Potosi	Mar 29-Apr 4		1	
Tampico	Mar 21-31	8	2	
Spain:				
Madrid	January - February.		13	
Straits Settlements:				
Singapore	Feb 22-28	2		
Tunis				
Tunis	Mar 19-25	16	21	
Union of South Africa				Jan 1-31, 1925. Cases, 4. Natives

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Chile:				
Valparaiso	Mar. 1-7		1	
Chosen				
Chemulpo	Feb. 1-28	1		
Seoul	do	2	1	
Mexico.				
Durango	Mar. 15-31	1	1	
Mexico City	Feb 15-Mar. 21	24		
Sweden:				
Goteborg	Feb 22-28	1		
Tunis.				
Tunis	Mar. 19-25	8	1	
Turkey:				
Constantinople	Mar. 1-7	1		
Union of South Africa				Jan. 1-31, 1925: Cases, 94; deaths, 12; native. In white population, cases, 2.
Cape Province				Jan. 1-31, 1925: Native. Cases, 41; deaths, 6.
Do.	Feb. 22-28			Outbreak
Natal				Jan. 1-31, 1925: Cases, 28; deaths, 4. Native.
Do	Feb. 15-21			Outbreaks.
Orange Free State				Jan. 1-31, 1925: Cases, 16; deaths, 2. Native.
Do.	Feb. 15-21			Outbreaks.
Transvaal				Jan. 1-31, 1925: Cases, 9. Native.
Yugoslavia				Mar. 8-14, 1925: Cases, 1.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 17, 1925[1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Dec. 27, 1924: Cases, 14; deaths, 13.
Colombo	Nov. 16-22	1		
Do	Jan. 11-24	2	2	
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 27,164; deaths, 16,228. Jan 4-Feb 7, 1925: Cases, 12,356; deaths, 7,309.
Bombay	Nov. 23-Dec. 20	4	4	
Do	Jan. 18-24	1	1	
Calcutta	Oct 26-Jan. 3	59	51	
Do	Jan. 4-Feb. 28	143	118	
Madras	Nov 16-Jan 3	69	40	
Do	Jan 4-Mar. 7	137	98	
Rangoon	Nov 9-Dec. 20	9	2	
Do	Jan. 4-Feb. 28	11	8	
Indo-China				Aug 1-Sept. 30, 1924: Cases, 14; deaths, 10.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept. 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov 30-Dec. 6	1		
Siam:				
Bangkok	Nov 9-29	4	2	
Do	Jan. 18-Feb 21	6	3	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov 2-Jan. 3	30	13	
Do	Jan. 18-24	3	1	
Brazil:				
Bahia	Feb. 15-Jan 10	3	3	
British East Africa:				
Tanganyika Territory	Nov. 23-Dec. 27	17	10	
Uganda	Aug -Nov., 1924	242	211	
Canary Islands:				
Las Palmas	Jan 21-23	2		Stated to be endemic.
Do	Feb. 4	1		Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec. 19	3	1	Vicinity of Santa Cruz de Teneriffe.
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon				
Colombo	Nov 9-Jan. 3	12	9	
Do	Jan 4-Feb. 28	9	11	5 plague rodents.
China:				
Foochow	Dec. 28-Jan. 3			Present.
Nanking	Nov 23-Jan. 31			Do.
Shing Hsien	October, 1924		790	
Ecuador:				
Chimborazo Province—				
Alausi District	Jan. 14		14	At 2 localities on Guayaquil & Quito Railway
Guayaquil	Nov. 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92.
Do	Jan. 1-Mar. 15	59	25	Rats taken, 45,027; rats found infected, 234.
Naranjito	Feb. 16-Mar. 15	1		
Yaguachi	Feb. 1-Mar. 15	2	1	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 17, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Egypt				Year 1924: Cases, 373. Jan. 1-28, 1925: Cases, 15.
City—				
Alexandria	Year 1924	2	2	Last case, Nov. 26.
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec 7.
Suez	do	20	13	Last case, Dec. 20.
Province—				
Dakhalia	Jan 1-8	1	1	
Kalioubiah	do	3		
Menoufieh	do	7	3	
Gold Coast				September-November, 1924: Deaths, 48.
Hawaii:				
Honokaa	Nov. 4	1		Plague-infected rodents found, Dec 9, 1924, and Jan. 15, 1925.
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 28,154; deaths, 21,505. Jan. 4-Feb. 7, 1925: Cases, 20,025; deaths, 16,761.
Bombay	Nov. 22-Jan. 3	4	3	
Do	Jan 4-17	2	2	
Do	Feb. 8-21	3	3	
Calcutta	Jan 18-24	1	1	
Karachi	Nov 30-Dec 6	2	1	
Do	Jan. 4-Feb. 21	12	11	
Madras Presidency	Nov. 23-Jan 3	685	487	
Do	Jan 4-24	658	511	
Rangoon	Oct 25 Jan 3	26	25	
Do	Jan 4-Feb 28	79	69	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 25; deaths, 20
Province—				
Anam	Aug 1-Sept 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Saigon	Dec 25-31	1	1	Including 100 square kilometers of surrounding territory.
Do	Jan. 11-17	2	1	Do.
Iraq	June 29-Dec. 13	18	13	
Japan	Aug 10-Dec 6	19		
Java:				
East Java—				
Blitar	Nov 11-22			Province of Kediri; epidemic.
Pare	Nov. 29			Do.
Sidoardjo	Jan 2			Declared epidemic, Province of Soerabaya.
Soerabaya	Nov 16-Dec. 31	71	72	
Do	Jan. 15-Feb. 7	4	3	
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov 18-Dec. 22		80	
Do	Jan. 1-14		44	Cheribon Province.
Do	Jan 30			Present.
Pasoeroean	Dec 27			Province Epidemic in one locality
Pekalongan	Oct. 14-Nov 3		29	
Do	Nov. 18-Dec. 31		177	
Do	Jan 1 14		81	Pekalongan Province.
Probalingga	Dec 27			Province. Epidemic.
Tegal	Oct. 14-Dec. 31		26	Pekalongan Province.
Do	Jan. 1-14		37	
Madagascar:				
Fort Dauphin (port)	Nov. 1-Dec. 15	12	5	
Itasy Province				Nov 1-Dec. 15, 1924: Cases, 4; deaths, 2.
Majunga (port)	Nov. 1-30	1	1	
Moramanga Province				Nov. 1-Dec. 15, 1924: Cases, 49; deaths, 34 Jan. 16-31, 1925: Cases, 4, deaths, 4.
Tamatave (port)	Nov 1-30	1	1	
Tananarive Province				Oct 16-Dec. 31, 1924: Cases, 298; deaths, 274
Do				Jan. 1-31. Cases, 135; deaths, 114.
Tananarive (town)	Oct. 16-Nov. 30	8	7	Bubonic, pneumonic, septicemic.
Do	Dec. 16-31	4	4	
Do	Jan. 1-15	1	1	
Mauritius Island				Sept. 7-Oct. 18, 1924: Cases, 60; deaths, 53.
Morocco:				
Marrakech				Feb. 9, 1925: Present in native quarter of town. Stated to be pneumonic in form and of high mortality

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 17, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Nigeria				August-November, 1924: Cases, 387; deaths, 317.
Palestine:				
Jerusalem	Mar. 3 9	1		
Peru	February, 1925	6	6	
Siam.				
Bangkok	Dec 28-Jan. 3	1	1	
Do	Jan 25-Feb. 14	2	1	
Siberia:				
Transbaikalia—Turga	October, 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Nov 9-15	1	1	
Do	Jan. 4-Feb. 28	8	6	
Syria:				
Beirut	Jan 11-20	1		
Turkey:				
Constantinople	Jan 9-15	5	5	
Union of South Africa	Jan. 4-Feb. 14	40	15	Native cases, 3; deaths, 1; white, 16 cases, 6 deaths.
Cape Province -				
De Aar District	Nov 22 Jan. 3	4	1	Native
Do	Jan 4 10	2		Natives, on farms.
Do	Jan. 25-31	1		Malay camp
Dronfield	Dec. 7 13	1		8 miles from Kimberley.
Edenburg (town)	Jan 25-31			Plague infected house mouse.
Kimberley	Dec 7 27	3	2	
Do	Feb. 1-7	1	1	On farm.
Maraisburg District	Nov 22 Dec 13	4	2	Bubonic, on Goedshoop Farm.
Steynsburg District	Jan 4-10	1		Native, on farm.
Orange Free State--				
Bloemfontein District	Dec. 21-Jan. 3	5	2	
Do	Jan 11-17	1	1	Do.
Ficksburg District	Dec 28-Jan 3	1	1	
Hoopstad District	Dec 7 13	1		On farm.
Kroonstad District	Nov 22-Jan. 3	2	1	
Do	Jan. 18-24	1	1	Native; on farm.
Philippolis District	Dec 21-27	1		
Vredefort District	Dec 7-20	2	2	On farms.
Transvaal-				
Boshof District	Dec. 7-Jan 3	3	3	On farm
Do	Jan. 11-Feb. 14	28	9	Native, 5 cases; white, 6 fatal cases. On farms.
Smithfield	Jan 11 17	1		
Winburg District	Feb. 8-14	1		On farm. Native.
Wodehouse District	Feb. 1-7	2	1	On farm
Wolmaransstad District	Nov. 22-29	1	1	On Farm Wolverspruit, Vaal River. Native.
On vessel:				
S. S. Conde				At Marseille, France, Nov. 8, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 31, 1924: Cases, 409. Jan. 1-20, 1925: Cases, 107.
Algiers	Jan. 1-Feb. 28	6		
Arabia:				
Aden	Jan. 25-Mar. 7	10	1	
Bolivia:				
La Paz	Nov. 1-Dec. 31	20	11	
Do	Jan. 1-31		5	
Brazil:				
Pernambuco	Nov. 9-Jan. 3	100	27	
Do	Jan. 4-Feb. 14	78	35	
British East Africa:				
Kenya—Mombasa	Jan. 18-24	1		
Uganda—Entebbe	Oct. 1-31	4		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 17, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
British South Africa:				
Northern Rhodesia	Oct 28-Dec 15	57	2	
Do	Jan 27-Feb 2	3		Natives.
Southern Rhodesia	Jan 29-Feb. 4	1		
Canada:				
Alberta—				
Calgary	Mar. 15-21	1		Stated to have been contracted in Ontario.
British Columbia—				
Ocean Falls	Mar 7-27	6		Very mild.
Vancouver	Dec. 14-Jan 3	32		
Do	Jan 4-Mar. 21	268		
Victoria	Jan. 18-Feb. 7	2		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-Feb. 27	30		
New Brunswick—				
Bonaventure and Gaspe Counties	Jan 1 31	1		
Northumberland	Feb 8-14	1		County.
Ontario				Nov 30 Dec 27, 1924: Cases, 33.
Hamilton	Jan. 24-30	1		Dec 28, 1924, to Mar. 28, 1925: Cases, 57; deaths, 1
Ceylon				July 27-Nov. 29, 1924. Cases, 27; deaths, 1.
Colombo	Jan 18-Feb. 7	4		
China:				
Amoy	Nov. 9-Feb 14			Present Feb. 22-28, 1925: One death.
Antung	Nov. 17-Dec. 28	5		
Do	Jan 5-Feb 14	15	1	
Foochow	Nov 2-Feb. 14			Present.
Hongkong	Nov 9-Jan. 3	6	2	
Do	Jan 4-Feb 7	9	7	
Do	Feb. 15-21	2	2	
Manchuria—				
Dairen	Jan 19-Feb. 1	2		
Harbin	Jan. 15-Feb 11	5		
Nanking	Jan 4 21			Do.
Shanghai	Dec 7-27	1	2	
Do	Jan 18-Mar 7		8	
Chosen.				
Seoul	Dec. 1-31	1		
Colombia:				
Buenaventura	Feb. 15-28	2		
Czechoslovakia				April-June, 1924: Cases, 1; occurring in Province of Moravia.
Dominican Republic:				
Puerta Plata	Mar. 8-21	3		
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt.				
Alexandria	Nov 12-Dec 31	10		
Do	Jan. 8-28	8		
Do	Feb. 26-Mar. 4	1		
Esthonia				Dec. 1-31, 1924. Cases, 2.
France				July-December, 1924: Cases, 81.
Dunkirk	Mar 2-8	1		From vessel. In quarantine.
St. Malo	Feb 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis.
Germany				June 29-Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1-10	1		
Gibraltar	Dec. 8-14	1		
Gold Coast				July-September, 1924: Cases, 82; deaths, 1.
Great Britain:				
England and Wales	Nov 23-Jan. 3	472		
Do	Jan. 4-Mar. 21	1,477		
Newcastle-on-Tyne	Jan. 18-Feb. 21	9		
Do	Mar 1-7	1		
Greece				January-June, 1924: Cases, 170; deaths, 27.
Do				July-December, 1924: Cases, 38; deaths, 26.
Saloniki	Nov. 11-Dec. 22	3		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 17, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 12,564; deaths, 2,857. Jan 4-Feb. 7, 1925: Cases, 13,888; deaths, 3,125.
Bombay	Nov. 2-Jan. 3	30	18	
Do	Jan. 4-Feb. 21	212	106	
Calcutta	Oct. 26-Jan. 8	307	170	
Do	Jan 4-Feb. 28	1,347	901	Mar. 5, 1925. Epidemic.
Karachi	Nov. 16-Jan. 3	16	2	
Do	Jan. 4-Feb. 14	52	6	
Do	Feb. 22-Mar. 7	21	9	
Madras	Nov. 16-Jan. 3	122	48	
Do	Jan 4-Mar 7	552	212	
Rangoon	Oct 26-Jan. 3	86	28	
Do	Jan. 4-Feb. 28	504	98	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 223; deaths, 76.
Province—				
Anam	Aug. 1-Sept 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov 16-Jan. 3	17	5	Including 100 sq. km. of surrounding country.
Do	Jan. 4-10	3	1	
Do	Jan 25-31	5	2	Do.
Tonkin	Aug. 1-Sept 30	19	7	
Iraq	June 29-Dec 13	137	66	
Bagdad	Nov. 9-Dec 27	2	1	
Italy				June 29-Dec. 27, 1924: Cases, 63.
Jamaica				Nov. 30, 1924-Jan. 3, 1925. Cases, 50. Reported as alastrim.
Do				Jan 4-31, 1925 Cases, 43. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim.
Japan				Aug 1-Nov. 15, 1924: Cases, 4.
Nagasaki	Feb. 9-15	3		
Taiwan	Jan 1-31	1		
Java:				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in 2 native villages.
Soerabaya	Oct. 19-Dec. 31	685	212	
Do	Jan. 15-Feb. 7	258	31	
West Java—				
Batam	Oct 14-20	2		
Batavia	Oct. 21 Nov 14	2		
Do	Dec. 20-Jan 2	19	4	
Buitenzorg	Dec 25 31	1		Batavia Residency.
Cheribon	Oct 14-Nov 24	15		
Do	Jan. 1-7	2		Cheribon Residency.
Pekalongan	Oct 14-Nov. 24	22		
Do	Dec. 25-31	3		Province.
Pemalang	Jan. 8 14	1		Pekalongan Residency.
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5.
Lithuania				Jan. 1-31, 1925: Cases, 2.
Mexico:				
Durango	Dec. 1-31		5	
Do	Jan 1-Feb. 28		10	
Guadalajara	Dec 23-29		1	
Do	Jan 6-Mar. 23		4	
Mexico City	Nov 23-Dec. 27	5		
Do	Jan 11-Mar. 21	31		
Monterey				Jan. 24, 1925: Outbreak. Mar. 14, 1925, present.
Salina Cruz	Dec. 1-31	1	1	
Do	Feb. 22-28	2		
Saltillo	do		1	
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-Mar. 20	51	16	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan. 5-Mar. 29		37	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Nigeria				January-June, 1924: Cases, 357; deaths, 87.
Do				July-November, 1924: Cases, 87; deaths, 25.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 17, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Persia:				
Teheran				Sept. 23-Dec. 21, 1924: Deaths, 12.
Do	Jan. 1-31		10	
Peru:				
Arequipa	Nov. 24-30		1	
Do	Jan 1-31		3	
Poland				Sept. 21-Dec. 28, 1924. Cases, 30; deaths, 2.
Portugal:				
Lisbon	Dec 7-Jan. 3	17		
Do	Jan 4-Mar. 14	78	7	
Oporto	Nov 30-Dec. 27	3	2	
Do	Jan. 11-Mar. 14	3		
Russia				January-June, 1924 Cases, 9,683. July-September, 1924: Cases, 1,251.
Siam:				
Bangkok	Dec 28-Jan. 3	1	1	
Do	Jan 18-Feb. 21		19	
Sierra Leone				
Freetown	Feb. 7-14	2		From S. S. Elmina.
Spain:				
Barcelona	Nov 27-Dec 31		5	
Cadiz	Nov 1-Dec. 31		51	
Do	Jan. 1-31		9	
Madrid	Year 1924		40	
Malaga	Nov. 23-Jan 3		97	
Do	Jan. 4-Mar 21		83	
Valencia	Nov 30-Dec. 6	2		
Do	Feb. 15-Mar. 21	4		
Switzerland:				
Lucerne	Nov 1-Dec 31	19		
Do	Jan. 1-31	24		
Syria.				
Aleppo	Nov. 23-Dec. 27	13		
Do	Jan. 4-Feb. 28	71	18	
Beirut	Feb 11-20	1		
Damascus	Jan. 6-13	2		
Do	Feb 11-20	22		
Tripoli.				
Tripoli	July 14-Dec. 12	52		
Tunis				
Tunis	Nov 25-Dec. 29	42	35	
Do	Jan 1-Mar. 18		227	
Turkey:				
Constantinople	Dec 13-19	5		
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 14.
Cape Province	Feb. 1-7			Outbreaks.
De Aar District	Jan 25-31			Outbreak at railway camp.
Do	Nov. 9-Jan. 17			Outbreaks.
Orange Free State	Nov 2-8			Do
Ladybrand District	Jan. 15-31			Outbreak, on farm.
Transvaal	Nov. 9-Jan. 10			Do.
Do	Feb. 1-7			Outbreaks
Uruguay				January-June, 1924: Cases, 101, deaths, 2
Do				July-October, 1924. Cases, 45; deaths, 4
On vessel:				
S. S. Eldridge	Mar. 23	1		At Port Townsend, from Yokohama and ports.
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St Malo, France, January, 1924, from Sfax, Tunis; believed to have imported smallpox infection.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924. Cases, 101; deaths, 14.
Algiers	Nov. 1-Dec 31	5	1	
Do	Jan. 1-Mar. 10	10	4	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 17, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Argentina:				
Rosario	Jan. 1-31		1	
Bolivia				
La Paz	Nov. 1-Dec. 31	3		
Do	Jan. 1-31	2		
Bulgaria				January-June, 1924: Cases, 191; deaths, 28.
Do				July-October, 1924: Cases, 5.
Chile				
Concepcion	Nov. 25-Dec 1		1	
Do	Jan. 6-12		2	
Do	Jan. 27-Feb. 2		1	
Iquique	Nov. 25-Dec 1		2	
Do	Feb. 1-7		1	
Talcahuano	Nov. 16-Dec. 20		5	
Do	Jan. 4-10		1	
Valparaiso	Nov. 25-Dec 7		4	
Do	Jan. 11-Feb. 21		10	
Chosen:				
Seoul	Nov. 1-30	1	1	
Czechoslovakia				December, 1924: Cases, 5.
Egypt				
Alexandria	Dec 3-9	1	1	
Cairo	Oct 1-Dec 23	13	8	
Esthonia				Dec. 1-31, 1924: Cases, 5.
Do	Jan. 1-31	4		
France				July-October 1924: Cases, 7.
Gold Coast				Oct. 1-31, 1924 1 case.
Greece				May-June, 1924. Cases, 116; deaths, 8.
Do				July-December, 1924: Cases, 40; deaths, 4.
Saloniki	Nov. 17-Dec 15	3	2	
Do	Jan 25-31	1		
Japan				Aug 1-Nov. 15, 1924: Cases, 2.
Latvia				October-December, 1924. Cases, 30
Lithuania				August-October, 1924: Cases, 15; deaths, 1.
Do				Jan. 1-31, 1925 Cases, 27; deaths, 2.
Mexico:				
Durango	Dec 1-31		1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District.
Do	Jan. 11-Feb. 14	40		Do.
Do	Mar. 8-14	4		
San Luis Potosi	Mar. 8-14		1	
Morocco				November, 1924: Cases, 5.
Palestine				Nov. 12-Dec. 8, 1924: Cases, 7.
Ekron	Dec. 23-29	1		
Jerusalem	do	2		
Do	Jan. 20-26	1		
Mikveh Isreal	do	1		
Ramleh	Feb 10-16	1		
Tiberias	Feb 24-Mar. 2	2		
Peru:				
Arequipa	Nov. 24-Dec. 31		3	
Poland				Sept. 28, 1924-Jan. 3, 1925: Cases, 751; deaths, 57.
Portugal				
Lisbon	Dec. 29-Jan. 4		2	
Oporto	Jan. 4-Feb. 7	2		
Rumania				January-June, 1924: Cases, 2,906; deaths, 328.
Do				July-August, 1924; Cases, 89; deaths, 12.
Constanza	Dec. 1-10	1		
Do	Feb. 1-28	2		
Russia				Jan. 1-June 30, 1924: Cases, 92,000, July-September, 1924: Cases, 5,225.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec 21-27		1	
Sweden				
Goteborg	Jan. 18-24	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from December 27, 1924, to April 17, 1925—Continued

TYPHUS FEVER—Continued

Place.	Date.	Cases.	Deaths.	Remarks.
Tunis				July 1-Dec 20, 1924: Cases, 40.
Tunis	Mar 5-11	1		
Turkey.				
Constantinople	Nov 15-Dec. 19	6	1	
Do	Jan. 2-Feb 28	8	1	
Union of South Africa				Nov 1-Dec 31, 1924: Cases, 345; deaths, 87
Cape Province	Nov 1-Dec 31	126	24	
Do	Feb 1-7			Outbreaks.
East London	Nov 16-22	1		
Do	Jan 18-24	1		
Port Elizabeth	Feb. 22-28	1		
Natal	Nov 1-Dec 31	130	50	
Do	Jan. 18-24			Do.
Durban	Feb. 15-21	1		
Orange Free State	Nov 1-Dec 31	59	8	Jan. 11-17, 1925: Outbreaks.
Transvaal	do	30	5	
Yugoslavia				Aug 3-Oct. 18, 1924. Cases, 17; deaths, 2.
Belgrade	Nov 24-Dec 28	5		

YELLOW FEVER

Place.	Date.	Cases.	Deaths.	Remarks.
Gold Coast	October-November, 1924	4	4	
Salvador:				
San Salvador	June-October, 1924	77	28	Last case, Oct 22, 1924.

TREASURY DEPARTMENT

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SPECIAL ARTICLES

Application of Ramon Flocculation Test to Toxin and Antitoxin of Scarlet Fever Streptococcus

Some Effects of High Environmental Temperatures

WASHINGTON
GOVERNMENT PRINTING OFFICE
1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

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PUBLIC HEALTH REPORTS

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APPLICATION OF THE RAMON FLOCCULATION PRINCIPLE TO THE TITRATION OF SCARLET FEVER STREPTOCOCCUS TOXIN AND ANTITOXIN

By R. E. DYER, Surgeon, Hygienic Laboratory, United States Public Health Service

The tests here reported were made to determine the possibility of applying the Ramon [1] flocculation principle to the toxin of a hemolytic streptococcus of scarlatinal origin and to the corresponding antitoxin.

In the first test a series of tubes was prepared in which the first tube contained 1.5 c. c. of toxin and 2.5 c. c. of antitoxin. The toxin was increased in each succeeding tube by 0.1 c. c., while the antitoxin was decreased by a like amount. The last tube contained 2.5 c. c. of toxin and 1.5 c. c. of antitoxin. Between the tube containing 1.9 c. c. of toxin and the tube containing 2.1 c. c. of toxin, extra tubes were added to allow an increase of 0.01 c. c. of toxin for each tube and a corresponding decrease of antitoxin. For the first five hours the tubes were kept in the 37° C. water bath. From the 5th to the 22d hours the tubes were kept in the ice box and then reincubated. Flocculation occurred in some of the tubes after 22 hours.

During the second incubation, flocculation appeared in all of the tubes. The results were too irregular to permit of any reading.

A fresh supply of antitoxin was obtained through the kindness of one of the manufacturers of biologic products. This antitoxin was used throughout the tests reported in the remainder of this paper and is referred to as antitoxin A. Protocol 1 shows the first titration with antitoxin A. The toxin H. L. 2 used in this and in the titration shown in the two subsequent protocols was prepared at the Hygienic Laboratory. In this test the tubes were filled at 11.30 a. m. and placed and kept in the 37° C. water bath until 4.30 p. m.; they were then removed from the bath and placed in the ice box over night and reincubated in the water bath the next day. Hours noted on the protocols count from the time when the tubes were first put in the 37° water bath. One control test was made using the same toxin combined with normal horse serum in similar dilutions and a second control with the same toxin combined with unconcentrated diphtheria antitoxin. Both of the control titrations were negative throughout.

[1] Ramon, G.: Floculation dans un mélange neutre de toxine-antitoxine diphthérique. C. r. de la Soc. de Biol., Paris, 1922, 86, 661-663.

Protocol 1.—*Overnight storage in ice box*

Toxin H. L. 2	Antitoxin A	29 hours	53 hours	Volume antitoxin / Volume toxin
c. c.	*c. c.*			
0.0	2.0	----------	----------	∞
0.1	1.9	----------	----------	19.0
0.2	1.8	----------	----------	9.0
0.3	1.7	----------	----------	5.7
0.4	1.6	----------	----------	4.0
0.5	1.5	----------	----------	3.0
0.6	1.4	----------	----------	2.3
0.7	1.3	----------	----------	1.86
0.8	1.2	----------	----------	1.50
0.9	1.1	----------	----------	1.22
1.0	1.0	----------	----------	1.00
1.1	0.9	----------	----------	0.82
1.2	0.8	F	F	0.67
1.3	0.7	FF	FF	0.54
1.4	0.6	FFF	FFF	0.43
1.5	0.5	----------	FF	0.33
1.6	0.4	----------	----------	0.25
1.7	0.3	----------	----------	0.176
1.8	0.2	----------	----------	0.111
1.9	0.1	----------	----------	0.053
2.0	0.0	----------	----------	0.0

F: Definite flocculation.
FF: Medium flocculation.
FFF: Strongest flocculation observed.

Using the same toxin and antitoxin, a test was then prepared with the amounts shown in Protocol 2. As it was necessary to measure amounts as small as 0.01 c. c. with greater accuracy than the available apparatus made possible, a micrometer syringe on the same principle as that described by Trevan [2] was improvised.

After preparation of the test as shown in Protocol 2, the tubes were incubated in the water bath at 37° C. for one hour. They were then stored in the ice box overnight and reincubated at 9 o'clock the next morning. The first positive reading was noted at 4 p. m. A second reading was made the following morning after the tubes had been stored in the ice box a second night.

Protocol 2.—*Overnight storage in ice box*

Toxin H. L. 2	Antitoxin A	24 hours	42 hours	50 hours	Volume antitoxin / Volume toxin
c. c.	*c. c.*				
0.86	2.14	----------	----------	----------	2.5
1.13	1.87	----------	----------	----------	1.65
1.33	1.67	----------	----------	----------	1.26
1.5	1.5	----------	----------	----------	1.00
1.64	1.36	----------	FF	FF	0.83
1.75	1.25	----------	FFF	Ppt.[1]	0.71
1.85	1.15	----------	FFF	Ppt.[1]	0.62
1.93	1.07	FF	FFF	Ppt.[1]	0.55
2.00	1.00	FFF	FFF	Ppt.[1]	0.50
2.06	.94	FF	FFF	Ppt.[1]	0.46
2.12	.88	----------	FFF	Ppt.[1]	0.42
2.17	.83	----------	FFF	Ppt.[1]	0.38
2.21	.79	----------	FF	Ppt.[1]	0.36
2.25	.75	----------	----------	FF	0.33
2.29	.71	----------	----------	----------	0.31

[1] Flocculi settled to the bottom of the tube.
[2] Trevan, J. W.: An apparatus for the measurement of small quantities of fluid. Lancet, 1922, 1, 786.

The flocculation resembled very closely the flocculation which occurs in the titration of diphtheria toxin and antitoxin by the Ramon method.

Two tests were then made, in the first of which normal horse serum was substituted for antitoxin A, and in the second unconcentrated diphtheria antitoxin was used. The toxin in both of these tests was H. L. 2. Both tests remained negative.

Protocol 3 shows a repetition of the tests shown in protocol 2. This test was incubated at 37° C. continuously until flocculation appeared.

PROTOCOL 3.—*Continuous incubation*

Toxin H. L. 2	Antitoxin A	12 hours	12.5 hours	13.5 hours	14 hours	24 hours	Volume antitoxin / Volume toxin
c. c.	c. c.						
0.0	3.0						∞
0.5	2.5						5.0
0.86	2.14						2.5
1.13	1.87						1.65
1.33	1.67						1.26
1.5	1.5						1.00
1.64	1.36						0.83
1.75	1.25					FFF	0.71
1.85	1.15		F	FFF	FFF	Ppt [1]	0.62
1.93	1.07		FF	FFF	FFF	Ppt. [1]	0.55
2.00	1.00	F	FF	FFF	FFF	Ppt [1]	0.50
2.06	0.94		F	FF	FFF	Ppt [1]	0.46
2.12	0.88					Ppt [1]	0.42
2.17	0.83					Ppt [1]	0.38
2.21	0.79					FFF	0.36
2.25	0.75						0.33
2.29	0.71						0.31
2.32	0.68						0.29

[1] Flocculi settled to the bottom of the tube.

Protocol 4 shows the titration of a toxin prepared and standardized by the Doctors Dick and kindly furnished by them.

PROTOCOL 4.—*Continuous incubation*

Dick toxin	Antitoxin A	9.5 hours	10 hours	11 hours	12 hours	13 hours	14 hours	Volume antitoxin / Volume toxin
c. c.	c. c.							
0.0	3.00							∞
1.25	1.75					F	FF	1.40
1.38	1.62		FF	FF	Ppt [1]	Ppt	Ppt.	1.17
1.5	1.5	F	FFF	FFF	Ppt [1]	Ppt.	Ppt	1.00
1.6	1.4		FF	FF	Ppt. [1]	Ppt.	Ppt	0.87
1.69	1.31			F	FFF	Ppt.	Ppt.	0.78
1.76	1.24						F	0.70
1.83	1.17							0.64
1.89	1.11							0.59
1.95	1.05							0.54
2.00	1.00							0.50

[1] Flocculi settled to the bottom of the tube.

The Dick toxin had been standardized at 17,500 skin test doses per cubic centimeter. Taking the third tube as the neutral point, the titration indicates that antitoxin A has a neutralizing value of 17,500 S. T. D. per cubic centimeter, ±10 per cent.

SUMMARY

The flocculation test has been applied to the toxin and antitoxin of a hemolytic streptococcus of scarlatinal origin and has given a definite reading which checks, on repeated tests. Comparison of results obtained by the flocculation method of titration and those obtained by skin tests are now being made.

SOME EFFECTS OF HIGH ENVIRONMENTAL TEMPERATURES ON THE ORGANISM

By FREDERICK B. FLINN, Associate Physiologist, Office of Industrial Hygiene and Sanitation, United States Public Health Service

The purpose of undertaking this research was to obtain a more intimate knowledge of the specific effects of high environmental temperature upon the individual organs and tissues of the body so that the more general effects as observed among men who are compelled to work where the air temperature is abnormally high could be more intelligently interpreted than has heretofore been possible.

The observations of Blagden and Forsythe, in 1775 (1), showed that a man in good health could stand for a period of 15 minutes an exposure to a temperature of 250° F. without feeling any ill effects, or a serious rise in body temperature, while a beefsteak exposed at the same time to the same environment was cooked in 13 minutes. It was also shown, by their experiments as well as by the work of later investigators, that the ability of the body to withstand this high temperature depended on the efficiency of the body in keeping cool by evaporation, and also on the relative humidity and stagnation of the surrounding air. Our experiments have been confined so far to an environment in which the air temperature was high and the relative humidity low, approximating very closely the conditions under which furnace workers are employed. We did not attempt to find the upper limit that a man could continue to live and work under, as investigations have shown that this upper limit varies not only for the different species but for the individuals of that species, and on the activities of the individual under exposure (2).

As the internal temperature begins to rise from the zero point in cold-blooded animals, there is a stimulating influence on all vital functions until the optimum of temperature has been reached; but when this optimum has been passed, there is an increased activity in compliance with the laws of chemistry, but at the same time at such a rate as to suggest a too rapid consumption of the organic matter in the body and a consequent deterioration. This increased activity continues only for a short rise in temperature above the optimum, when the functional activities are reduced until finally

a coma ensues as the body receives some irreparable injury and death follows. It is the ability of the body to keep this internal temperature within the normal limit by radiation, conduction, and evaporation that determines its power to withstand high temperature. In environment where the air temperature is above the body temperature it must depend entirely on evaporation for its cooling, as any conduction or radiation would be in the reverse direction, i. e., from the air into the body. That such a reversal takes place while the heat-regulating mechanism of the body is functioning normally is doubtful, as probably the evaporating moisture from the body surface absorbs some of its calories from the surrounding medium and increased evaporation takes place, thus preventing the absorption of the heat by the blood.

In connection with radiation it might be said that if our observations while drawing blood from the jugular vein after an hour's exposure to an air temperature of 50° C. were correct it would seem that very high temperature may produce vasoconstriction and a greater viscosity of the blood. If it is so it would follow the theoretical reasoning as to the advantage to the organism if its circulating tissue could be withdrawn from the influence of a very high external temperature.

We decided to use the dog in our experimental work in spite of the objections recognized by us that it had developed a strikingly different method of cooling the body by the evaporation of water from that which has been developed by man. However, a survey of the animals generally used in laboratory studies reveals the fact that with the exception of the horse and, to a certain extent, the monkey, there are no animals whose heat-regulating mechanism resembles that of man. The horse may have been best suited for this study, but we had no means of handling animals of this size and we were compelled to look to the smaller animals. Our results, in spite of this difference in the method of evaporation between man and the dog and its theoretical effect upon blood gases, seem to indicate that any differences are quantitative and that the qualitative changes in the gases which result from exposure to high temperature are the same for the two forms. Aside from this theoretical objection the dogs proved to be as nearly ideal as could be hoped for.

We have centered our attention on the study of a single tissue—the blood—because of the rapidity and accuracy with which it reflects the changes that are taking place in the organism, and because it is the only tissue that can be sampled and leave the animal as nearly normal biologically as it was before the sample was taken. In no case was vivisection or cannulization practiced. The blood was examined as to oxygen content and capacity, the carbon dioxide content and capacity, the sugar, and the total solids, all of these

determinations being made as a matter of routine. In a few cases the iron of the blood was determined as a control on the oxygen capacity. In a second series the concentration of the hydrogen ion and the carbon dioxide content were determined routinely, with an occasional determination of lactic acid.

In a third series of experiments the effect of increasing the air movement during an exposure to an air temperature of 50° C. was studied. This was followed by another series to see what effects would be observed if the animal were permitted to drink water freely during the exposure to the increased air movement at 50° C. The temperature of the water supplied the animals was 25° C.

In presenting the data which we have obtained, we are aware that various investigators since the time of Claude Bernard have reported observations on the blood of animals exposed to high temperatures; but it has seemed to us that these results are not only fragmentary but, in some cases, of such doubtful accuracy that a clear-cut interpretation of them is most difficult. The inaccuracy, where it occurs, results not only from faulty chemical technique but frequently from an abnormal condition of the animals, many of which were subjected to anesthesia, which would not only disturb the heat-regulating mechanism but also the general metabolism of the subject. Furthermore, these observations have been made at various times and on various animals, while it was our object to correlate as much data of as many types as would be practicable on a given series of individuals or of one species.

In addition to the data on the blood mentioned above, we have recorded the rectal temperature and the body weight whenever a sample of blood was drawn, and more frequently in certain of the experiments.

Methods

CHEMICAL

(*a*) The carbon dioxide content and the alkali reserve of the blood as represented by the carbon dioxide capacity were determined by the methods of Van Slyke (3). The oxygen content and capacity were determined by the method of Van Slyke and Stadie (4), except that it was found necessary to add three or four drops more of potassium ferricyanide than is suggested by these authors. This may have been due to the fact that we used the product of a different manufacturer. In all of these determinations the old, or short, form of the Van Slyke apparatus was used, as it is considered of sufficient accuracy for comparison work. Our results as obtained in this manner were checked by those obtained with the newer form having the longer stem and water jacket, and the differences found were not sufficient to warrant the added difficulties encountered with the later

form. The shorter time required for analysis by the old form was a matter of considerable importance because it was necessary that determinations be made within the short time permitted by the experiment, and all of the determinations were made by a single individual so that the differences due to personal equation would be eliminated.

(*b*) The sugar of the blood was determined by MacLean's (5) method for the use of one cubic centimeter, as modified by Hastings and Hopping (6).

(*c*) The total iron of the blood was occasionally determined as a means of controlling the oxygen determinations. When this was done the method published by Brown (7) was used, except that we found that the colorimeter gave a far more satisfactory means of comparing the colors than did the method described by the author.

(*d*) The lactic acid was determined by the method which we have described elsewhere (8), except that at the suggestion of Dr. Greenwald, the filtrate was extracted with ether to avoid the disturbing influence of the sugar which occurred when the determination was made directly on the Folin filtrate. It is recognized that this method is not specific for lactic acid and that the determination might include other hydroxy acids, but since we were unable to find indications of an increase, we feel that it was sufficient to justify the conclusions which we have drawn.

(*f*) The total solids were determined by drying 1 cubic centimeter of blood to constant weight in an electric oven at a temperature of 110° C. This was done in duplicate in silica crucibles.

(*g*) The hydrogen ion concentration was determined by the method described by Cullen (9). The phosphate solutions which were used as standards of comparison were checked by means of the potentiometer.

PHYSICAL

(*a*) The temperature chamber in which the animals were exposed to the various environmental conditions was constructed of two thicknesses of beaver board, with a 4-inch air space between them. The chamber contained three windows, one at one end, another at one side, and the third on the top. These windows were all 2 feet square, and consisted of two sheets of glass with a 2-inch air space between them. A stove stood at one end, under the window; at the opposite end there was a single wooden door lined with beaver board. The chamber was approximately 4 feet wide by 7 feet long by 7 feet high. The method of heat control and of ventilation was that described by Hastings (10), and it has proved very satisfactory. The temperature of the chamber was controlled by a Roux bimetallic gas regulator. Fresh air was admitted to the chamber by means of several rows of 1-inch holes drilled through the upper part of the door.

Stratification and pockets were prevented by convection currents, as recommended by Hastings, and by use of a 6-inch fan. Thermometers placed in various parts of the chamber showed no stratification or variation in temperature, within one-half of 1° C., while the control throughout the day was within 1°.

The relative humidity within the chamber was determined by the sling psychrometer, and the air movement by means of a Short & Mason anemometer, readings being taken in various parts of the chamber.

The body temperature was taken by rectum with an ordinary certified clinical thermometer, which was left in place for a minimum period of a minute and a quarter.

The respiratory rate was counted by means of a Fitz stethograph recording on a smoked drum with a Marey tambour.

BIOLOGICAL

All of the dogs used in these experiments were adult, short-haired mongrels, varying in weight from 10 to 15 kilograms. They were kept when not actually in use for the experiments, in a kennel on the roof, were maintained in a healthy condition throughout the period of experiments, and were used exclusively for the purpose of the research here reported. Their diet consisted of bread and cooked meat in an amount at least sufficient to maintain their weight. As a matter of fact most of them gained in weight during the course of the experiments. They received no food for a period of 18 hours before beginning each experiment. During this time the dogs were supplied with all the water they wanted to drink. It was always before them.

It was our practice to bring the dogs, which were to be used in an experiment, to the laboratory at least half an hour before actually beginning the work, in order that they might become quiet and somewhat accustomed to conditions and to the personnel of the laboratory before the initial sample of blood was drawn. A rest period of at least two weeks was permitted each dog between experiments to allow recovery from any deleterious effects of the exposure to the high temperatures, or any ill effect resulting from the hemorrhage attendent upon the experiment.

The need of this rest period after an exposure to high environmental temperature has been clearly demonstrated from our own experience in the loss of animals when trying to cut down the time between exposures when only physical measurements were being made and before we realized that some change had taken place in the animal during the last exposure from which it had not yet recovered. In each case the animal was apparently in a normal condition as far as temperature and behavior would indicate. This change may consist in a deterioration in the nervous system, as Goldschneider and

Flatau (11) have shown that the nerve cells in the ventral horn undergo a change in their normal structure after an artificial heating of the animal to 42°–44° C. Barker (12) calls attention to the fact that when the animal has been removed from an environmental temperature of 42° to 44° C. there is a gradual restitution of these cells, but that the rate of repair is not nearly so rapid as the appearance of the function would indicate and that complete recovery requires at least several days. Halliburton and Mott (13) have shown that well-marked changes occur in the Nissl's granules, and that the nerve cells will coagulate if a temperature of 42° C. be maintained for some time. Brecht (14) found that frogs underwent a condition that resembled motor paralysis, from which the animals recovered on cooling if the exposure did not last too long or if the temperature went no higher (34° C. for the frog). It was noticed by him that isolated nerve trunks lost their conductivity and excitability during an exposure, which was regained when the temperature was lowered. Brecht, moreover, claims that when heat paralysis appeared in the skeletal muscle it became permanent. It has been suggested that the high temperature may cause a partial coagulation of the protein in the voluntary and cardiac muscular fibers. Shelford (15), in his work on evaporation, calls attention to the fact that short exposures to high evaporation increase the sensibility to evaporation. In a future paper we hope to bring out some of the histological changes that take place in the tissues under heat exposure,

During the exposure in the heat chamber, the animals were confined in a cage or tied, so that while they had a certain amount of freedom, they could not come in contact with the heater or otherwise injure themselves or the apparatus. At the lower temperatures, their behavior was normal, and they rested quietly or slept, unless disturbed for the purpose of observation. At the higher temperatures of 45° and 50° C. they became restless during the first part of the exposure. This was especially noticeable at 50° C. and an air movement of only 50 to 60 feet per minute. During this period of restlessness the animals were evidently uncomfortable and tried to escape from the cage or chamber. In about half an hour this period of restlessness passed, followed by one of semi-indifference to their surroundings, and they appeared, at times, to be on the threshold of coma. At the end of the hour's exposure they made no effort to move by themselves. This period of indifference lasted for the greater part of an hour after the removal from the heat, but at the end of two hours they appeared to have recovered the use of their faculties.

When the air movement was increased to 224 feet per minute during an exposure of 50° C., the period of increased excitability did not appear during the four hours of exposure. The animals,

while perhaps more restless than at the lower temperatures, remained, on the whole, quiet, though there did not seem to be the same tendency to sleep as at the lower temperatures. This nonappearance of the period of great excitability is rather hard to explain, as, after the first hour, there was a definite rise in body temperature, though it did not rise as high as when the air movement was only 50 to 60 feet per minute. The blood gases also showed the same trend at the end of the four-hour exposure as was found at the end of one hour with the same temperature and lower air movement. The animals seemed to be fatigued and lay down quietly for a short time after their removal from the closet, but except in one instance, their recovery from the exposure was fairly rapid, if their behavior could be taken as a standard. In that case the loss in body weight brought about by the increased air movement resulted in the death of the dog within 30 hours after the removal from the heat closet. The dog was unable to stand when removed from the heat closet and seemed partially paralyzed in the hind limbs. It refused all food, drank very little water, and remained in a dazed condition until death. This exception is probably due to the great loss of body fluid, approximating the 10 per cent which Hill (16) claims is the limit of loss for man.

In the next series of experiments, in which the dogs were permitted during an exposure to an air temperature of 50° C. and air movement of 224 feet per minute to drink all the water they desired, the water being set before them every 20 minutes, the animals, after a short period of restlessness, became quiet after the first drink and remained so until the end of the four-hour exposure. When removed from the closet, they showed no apparent signs of fatigue, being from all appearances as fresh as they were when brought into the laboratory.

This period of excitability concomitant with a rise in body temperature has been noted by most of the investigators of the effect of high-air temperature on animals. Man shows the same signs when there is a definite rise in the rectal temperature to 99.5° F. (37.5° C.), at which point there is an abrupt change from sleepiness to wakefulness and irritation. If the rectal temperature of the man under exposure rises to 101°-102° F. (38.36°-38.9° C.) he is no longer capable of mental activities such as reading a book or learning a vocabulary. Sitting in one position is irksome, and the only way of finding comfort seems to be in changing one's position. With the rectal temperature at 103° F. (39.1° C.) any irritation is trying to his temper. This irritability is closely associated with the rise in body temperature and is a warning of an early exhaustion of the central nervous system (17).

SAMPLES

All blood samples were drawn from the jugular vein by venepuncture. The initial values for all animals were averaged and subtracted from corresponding average values at successive periods of time. These deviations are plotted on the graph, the horizontal lines representing the average condition at the beginning of each experiment.

Experimental Results and Discussion

I. THE EFFECT OF VARIOUS ENVIRONMENTAL TEMPERATURES UPON THE BODY TEMPERATURE

The course of the body temperature during the several conditions is shown in Figure 1. The mean temperature of 47 initial observations was 38.7° C. When the animals were kept in the chamber at the ordinary room temperature, 20° C., it was found that the body temperature fell slightly for a time and then remained at a fairly constant level for the remainder of the period of observation. Similar results for man subjected to similar conditions have been reported by the New York State Commission on Ventilation (18). At an environmental temperature of 30° C., the history was much the same, except that the fall was not quite so marked. This last observation is somewhat at variance with the findings of the New York State Commission on Ventilation, as they reported a slight rise in temperature for man exposed to an air temperature of 30° C., but with a relative humidity of 80 per cent, which was much higher than it was in any of our experiments.

Investigations by such men as Jurgensen (19), Richet (20), and Benedict and Snell (21) seem to agree in the main that the minimum temperature of the body is reached between 4 and 6 in the morning and the maximum temperature between 4 and 6 in the evening. The very careful observations by Pembrey and Nichols (22) gave a mean difference in rectal temperature of 1.25 of a degree centigrade between the time of maximum temperature, which they found to be between 4 and 7 in the afternoon, and the minimum, which occurred between 2 and 5 in the morning. They found that these variations could not be taken as the normal limits of temperature, as either muscular work or a warm external temperature would cause a rise above the average maximum temperature.

Observations by Tigerstedt (23) show that while muscular activity may be an important factor in the daily variations in temperature it is not sufficient to explain it entirely. It might be explained as being due to stimulation or cessation of all impulses to the nervous system, which, in return, effects the metabolism of the body. Chossat (24) found that if he awakened the animal during the night, its body

temperature rose and soon reached the point that he had observed as being normal for the morning.

It would seem to us that our variation in temperature at these two exposures may be explained by the cessation of nervous stimulation affecting muscular activities, due to the fact that the animal spent most of its time sleeping except when disturbed by us for the purpose of observation.

The work by Rubner (25) is interesting, for he has shown that a temperature of 20° C. is readily borne by the dog without an increase in the rate of metabolism, and that 30° is the temperature of minimum requirement of energy release compatible with mammalian life. Winternitz (26) working with hot baths, also found that a minimal rate of metabolism for the body existed at 30°, for no further drop in metabolism was evident on an exposure to a greater heat. With reference to the lessened activity of the animals, Douglas and Haldane (27) found that man resting in bed consumed 237 c. c. of oxygen per minute; while he was standing at rest the consumption rose to 330 c. c. Such moderate exercise as walking at the rate of 2 miles per hour increased the consumption to 780 c. c. One liter of oxygen produces 4.8 calories in oxidation.

When the temperature of the chamber is raised to 40° C., the response of the organism is quite different. Here we find a rise of 1 degree during the six-hour period of observation, i. e., there was no evidence of the initial fall observed in the other two cases. The temperature remained constant during the middle period, the rise being confined to the first and last two-hour periods. This slight increase may be due to the fact that our wet bulb was nearly 26.6° C. (80° F.). Haldane (28) has observed in man that if he is stripped to the waist and if wet bulb exceeded 31° C. (88) by even 1 degree it resulted in a marked rise in rectal temperature. Our animals might be considered to be in the same condition as a man fully dressed. It is well to note that the legal limit for temperature of cotton weaving sheds in England is 23.9° C. (75° F.) wet bulb.

When the air temperature was raised to 45° C., or to 50° C., a very marked rise in the rectal temperature was noted, and apparently this rise begins at once. In fact it was so sharp that the body temperatures rose within an hour, in some cases to such a height that it was not deemed safe to let the dog remain in the heat chamber for a longer period. On being taken from the heat chamber, the body temperature began to fall rapidly and at the end of two hours, in some instances, to as low as 36° C.; but in every case it was subnormal. This subnormal temperature reminds one of certain stages in cases of heat stroke in man. A peculiarity of this final rise is that the body temperature is sensibly the same for the two environmental temperatures. This is a phenomenon which has been noticed in some of the

other factors studied, notably those having to do with carbon dioxide. The organism seems to respond with increasing rapidity as the strain on its regulation mechanism becomes more severe, until a certain limit is reached at which great resistance is interposed by the organism against further change, and if exceeded and left to itself, it then recovers with great difficulty if at all. This type of physiological limitation was noticed by Yandell Henderson and H. W. Haggard (29) during their work on low levels of CO_2 and alkali induced by ether. This critical point was also recognized by Britton (30) in his study on cooling. In order to lower the body temperature of his animals below it, he found it was necessary to subject them to anesthesia until the critical point was passed, after which the anesthesia was no longer necessary and the body temperature continued to fall while the animal was exposed to the low environmental temperature.

When the air movement was increased to 224 feet per minute in our third series of experiments, at an air temperature of 50° C., the body temperature showed very little rise the first hour, amounting only to 0.4° C. By the end of the four-hour exposure it had risen to 41.3° C., or an increase of 2.6° C. This increase in body temperature in spite of the increased air movement is interesting in view of the fact that so much emphasis has been placed lately on air movement. There appears to be no doubt, if we interpret our results correctly, that air movement must be studied from a viewpoint of evaporation. Air movement may delay the discomfort of the organism exposed to high environmental temperatures by keeping the body cool temporarily because of the increased rate of evaporation, but at the expense of the organism itself by lowering the water reserve. That the animal will survive in excellent condition an exposure to high air temperature or movement if the water lost to the organism is replaced concurrently, is shown by our fourth series of experiments. In this series the animals were encouraged to drink all the water that they desired. During the first hour of exposure in this series there was a rise in body temperature of 0.7° C., which is hard to explain, as we had the same air movement and temperature as in the previous series. However, it was not very serious in view of the fact that at the end of the four-hour exposure the animal's temperature was back to what it was at the beginning of the experiment.

II. THE EFFECT OF VARIOUS ENVIRONMENTAL TEMPERATURES UPON THE OXYGEN CONTENT AND UPON THE AMOUNT OF HEMOGLOBIN OF THE BLOOD

Considering first the oxygen capacity (hemoglobin) we find very little change at environmental temperatures of 20° and 30° (Fig. 1). Such small changes as do appear may very probably be related to the diurnal variations in the hemoglobin content which have been

shown to take place by Dreyer, Bazett, and Pierce (31) from observations made on man and goat. At temperatures of 40° and above there is a slight tendency for the oxygen to become somewhat more marked as the air temperature increases. This increase is paralleled by an increase in the total solids and we have related it simply to an increase in the concentration of the blood, due to an excessive evaporation of water, accompanied by an inability of the water reservoirs of the body to supply water at a rate sufficient to meet the demand made upon them at these high temperatures. The fact that there was no increase in the oxygen capacity during the first two-hour period of exposure to a temperature of 40° C. would seem to bear out this interpretation; for at this temperature the loss would not be so rapid but that it might be fair to assume that there might be time for equilibration, and that there had not as yet occurred so great a loss that the available store of water had become seriously depleted. The later rise was, then, probably due to an actual depletion of the available water below the limit where the original concentration of the blood could be maintained.

At 45° and 50° it may be presumed that while the actual quantity of water which had been lost from the tissues during the hour of exposure is possibly not serious, the rate of loss is so rapid that the organism is unable to maintain the original concentration of the blood. The rapid return of the oxygen capacity and of the total solids to their original level during the first two hours after the animal was removed from the chamber would tend to support this theory. It is further supported by the results of the third and fourth series. In the third series there is a constant increase in the oxygen capacity paralleling the increase in blood solids which in this case is greater than with the lesser air movement. In the fourth series the oxygen capacity dropped during the exposure, again running parallel with the blood solids which fell as the water lost by the blood due to evaporation was replaced by the water which the dog drank during the exposure.

A very slight fall in the oxygen capacity of the animals exposed to 30° C. is noticed. A comparison of this fall with its mean standard deviation, however, indicates that it is too small to be of significance from the standpoint of statistics.

There is a fairly well-marked fall in the oxygen content of the venous blood (Fig. 1) of animals exposed to a temperature of 30° C. as compared with that of animals exposed to a temperature of 20° C. This, we believe, is a reflection of the manner in which the organism responds to the two environmental temperatures. At 30° C., and with the humidities with which we were working, there appears to be nearly an equilibrium between the heat generated in the basal metabolism and the heat lost to the environment (*Cf.* Voit (32)). The

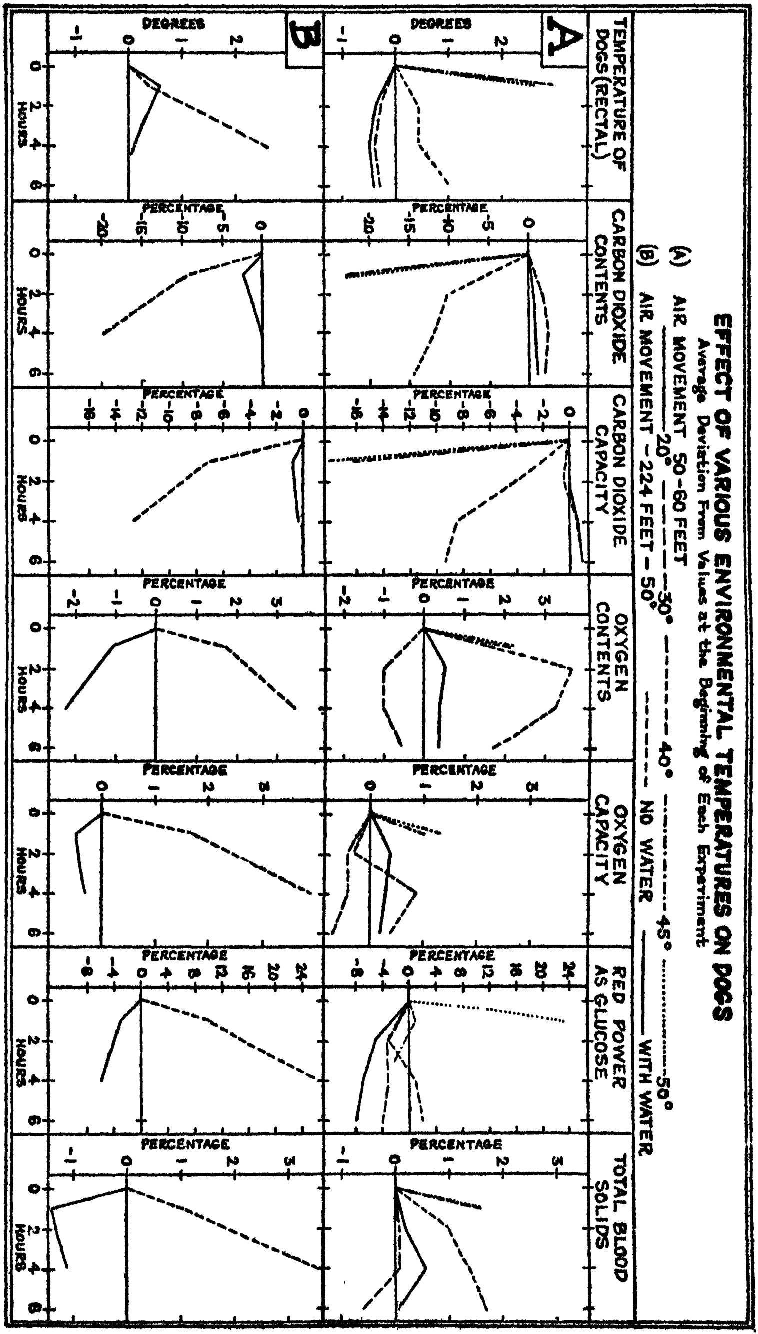
EFFECT OF VARIOUS ENVIRONMENTAL TEMPERATURES ON DOGS
Average Deviation From Values at the Beginning of Each Experiment
(A) AIR MOVEMENT 50-60 FEET
(B) AIR MOVEMENT - 224 FEET - 50°
20°
30°
40°
45°
50°
NO WATER
WITH WATER
A
B
TEMPERATURE OF DOGS (RECTAL)
CARBON DIOXIDE CONTENTS
CARBON DIOXIDE CAPACITY
OXYGEN CONTENTS
OXYGEN CAPACITY
RED POWER AS GLUCOSE
TOTAL BLOOD SOLIDS
DEGREES
PERCENTAGE
HOURS

FIG. 1

animals are quick to take advantage of this and proceed to stretch themselves out and "take life easy." Tachypnea is not necessary to keep the body temperature down. All muscular movement, and consequently heat generation, is at a minimum. The net result is a considerably reduced aeration of the blood, as well as a reduced circulation, and consequently a lower oxygen content.

At 40° C., there is a considerable increase in the rate of respiration, and correlated with this is a rather marked increase in the oxygen content of the blood. The rate of increase in oxygen content is slightly greater at 45° C. and 50° C., but these increases are not nearly so great as might be expected when one compares them with that which occurs between 30° and 40° C. This may be expiained by a study of the results of Schierbecks' (33) observations on man at rest. The results were as follows:

Temperature of air	Water from skin per hour	Carbon dioxide from skin per hour
	Grams	*Grams*
28.4	51.0	0.35
28.9	50.8	.33
29.5	74.3	.33
31.8	110.1	.30
32.7	119.1	.37
33.4	122.3	.80

In the case of man, when the external temperature reaches the critical point, between 33° and 36°, beads of sweat appear and there is a great increase in the discharge of water and carbon dioxide from the skin. It is probable that at about the same critical temperature tachypnea first shows with the dogs.

As the environmental temperature rises, the rate of respiration increases, but at the same time becomes progressively more shallow, so that while the efficiency of the respiratory apparatus as a cooling mechanism may increase because of the increased passage of air over the hyperemic tongue and membrane of the mouth and throat, with a consequent increase of the vaporization of water, its efficiency as a means of aerating the blood does not increase in anything like the same ratio if at all. The rate of metabolism is also raised with the increased body temperature, and this in turn would be reflected in a decreased oxygen content of the venous blood, provided that there is not a considerable increase in the amount carried in the arterial blood. The curves showing the percentage of saturation are very satisfactorily explained by this hypothesis (Fig. 1).

With the increased air movement in the third series we do not get the labored breathing that is so noticeable with the high temperature and lower air movement. The rate of respiration was very similar

to that which can be noticed in a dog exposed to the sun on a hot summer day, deep and fairly rapid. The oxygen contents follow the same course as with the lesser air movement.

In the series where water was freely drunk, the oxygen contents dropped from the beginning in the same way that the oxygen capacity did. There has been a growing feeling in our minds that in many of our experiments the oxygen content as well as the oxygen capacity followed the course of the blood solids, and that the increase or decrease is simply due to an increased or decreased amount of hemoglobin, brought about by a concentration of the blood by loss of water for any given percentage hemoglobin saturation. W. Gross and O. Kestner (34), in their work on the influence of muscular activity and perspiration on the blood and tissues, have shown that the increase in hemoglobin concentration is not proportionate to the increase of albumin concentration in the serum.

III. THE EFFECTS OF VARIOUS ENVIRONMENTAL TEMPERATURES UPON THE CARBON DIOXIDE CONTENT AND UPON THE ALKALI RESERVE OF THE BLOOD

There is no change in the alkali reserve of the blood expressed as carbon dioxide content during an exposure of six hours to an air temperature of 20° or 30° C., as is shown by Figure 1, in which it will be seen that the two curves are identical within the limits of the mean standard deviation and that both are horizontal.

When the environmental temperature is raised to 40° C., there is a fairly rapid fall during the first four hours and a somewhat slower fall during the remaining two hours. At 45° and 50° there is a very rapid depletion of the alkali reserve as measured by the carbon dioxide capacity, this depletion being almost identical in degree for the two temperatures. This is a very good illustration of the critical point discussed in connection with the body temperature. We believe that the changes observed result directly from the equilibration necessitated by the washing out of the carbon dioxide brought about by the tachypnea due to high temperature. This tachypnea becomes dyspnea if the exposure is continued over too long a period.

With the increased air movement there is a more gradual depletion of the carbon dioxide capacity extending over the entire four-hour period, though the final results are the same. This slower depletion is directly related to the difference in the rate and type of breathing. As would be expected from the other results discussed, when water was freely drunk the alkali reserve remained on a horizontal line.

The carbon dioxide content (fig. 1) gives a parallel picture, except that there was a slight rise in the animals exposed to the air temperature of 30°. This is probably due to the same cause as the corre-

spondingly slight depression of the oxygen content which was noted for the same condition, i. e., a slight depression in the rate of metabolism which would be as has been shown by Rubner and others at its lowest point under these conditions. This depression would result in a slight decrease in the rate of respiration and circulation.

IV. THE EFFECT OF VARIOUS ENVIRONMENTAL TEMPERATURES UPON THE HYDROGEN ION CONCENTRATION OF THE PLASMA

The hydrogen ion concentration of the plasma expressed as pH remains constant for at least six hours when the animals are exposed to temperatures of 20° and 30° (Table 2) and falls within the normal acid-base balance, or area 5 of Van Slyke's chart (35). At 40°, with an increased rate of respiration and the resultant fall in the carbon dioxide content and the alkali reserve, we find that the blood has passed from area 5 to area 6 of the Van Slyke chart, or into the area of compensated carbon dioxide deficit. The bicarbonate of the blood also falls, thus preventing an abnormal alkalinity. As the strain becomes greater the increasing air temperature to 45° and 50°, the pH increases from the normal of 7.55 to 7.79 and to 7.84 for the two temperatures, respectively. The carbon dioxide content of the plasma has dropped to 29.89 and to 26.53 volumes per cent, respectively, and the plasma has passed into area 2 or 3 of Van Slyke's chart, or that of uncompensated carbon dioxide deficit, as a result of an excessive loss of carbon dioxide. This loss of carbon dioxide was induced by an increase of the respiratory rate, which was evidently brought about by some stimulus other than an increased hydrogen ion concentration of the blood. In the case of man there is a great loss of carbon dioxide through the skin as well as through the respiratory organs. The same condition observed in the dog has been observed by Bazett and Haldane (36), in man when immersed in warm baths. Kahn (37) and Barbour (38) are of the opinion that the mechanism causing the increased rate of respiration is the increased temperature of the blood. Tachypnea seems to be a reflex phenomenon that can result independently of the vagus nerves. Richet (20) observed that when he cut the vagus nerves of a small dog, its respiration became slow and difficult—five respirations per minute; but on placing the animal in an incubator for several hours, the rate of respiration increased to 120 times per minute with the body temperature remaining unaltered. It would seem that after the section of the vagi the dog could maintain its temperature in the same way that any healthy dog exposed to the sun in the summer would by beginning to pant in a few minutes. The causes for the increased breathing are complex and are associated apparently with a rise in body temperature and consequently blood temperature, the quality and quantity of the blood that supplies the respiratory centers in the medulla oblongata,

and nerve impulses from many sources, especially the lungs. It is known that cellular activities in general increase, within limits, with the temperature, and there is no apparent reason for excepting the respiratory center from this category.

It was first thought that the stimulus might be due to a local accumulation of hydrogen ion within the cells of the respiratory center itself, which was a part of a general tissue, anoxemia depending upon the increased stability of the oxyhemoglobin at low carbon dioxide tensions (Bohr (39)). If such an anoxemia should in truth exist, one would expect to find it indicated by an accumulation of lactic acid in the blood; but a careful search has failed to show an increase of this acid in the blood of animals exposed to high temperatures over that occurring under normal conditions. It is difficult for us to imagine a significant acidosis occurring in the tissues without being reflected in the blood.

The results of our experiments so far do not warrant our accepting the suggestions of Hill and Flack (40) or of Mayer (41) that the fatal termination from overheating the organism is due to the accumulation of acid; for while it is true that when the animals died as a result of the exposure we found there was some accumulation of carbon dioxide, the same condition prevails when the circulation is in any way interfered with. As we picture it, any excess body temperature due to overheating throws an extra load on the heart, which has to drive the blood through the areas of heat loss in an ever increasing volume. The blood would tend to accumulate in these areas, and, consequently, the brain and other internal organs would receive an inadequate supply (42). Steward (43) has shown that forced breathing will slow down the circulation. In our animals the rate of respiration increased from a normal of 18 to 20 per minute to 380 and more under the extreme conditions studied by us, and with this change in rate it becomes more shallow. Under the strain thrown upon it, the heart becomes progressively more fatigued and would lose its efficiency. Henderson, Barringer, and Harvey (44) showed that an inhibition of the venous pressure occurs whenever the CO_2 content of the blood is diminished by excessive ventilation. A fall in arterial pressure is noticed because of the diminished output of the heart. The apparent cardiac failure is due to the diminution in the pressure and volume in the right heart. It is not easy to say whether the cardiac condition is the cause or the effect of the failure to regulate the temperature. It is well known that men with weak or diseased hearts easily fall victims to heatstroke; on the other hand, the heart is readily injured by a high temperature and a deficient or defective supply of blood (Pembrey and Richie (45)).

Any stagnation of circulation would tend to cause an accumulation of carbon dioxide. It may be that Hill and Flack were led to

suspect acidosis from the low carbon dioxide content of the alveolar air; but it seems to us that this might as well be due to the over-ventilation of the lungs which exists under these circumstances. We have noticed a small accumulation of carbon dioxide in the blood of the two dogs which died after exposure to high temperature. In each of these cases the rate of respiration dropped to normal just before death. It may be of some interest to note that at the same time there was a marked increase in the tendency of the blood to coagulate. An analysis of the blood taken ten minutes before death gave the following:

Oxygen content	5. 89
Oxygen capacity	23. 56
Carbon dioxide content	30. 45
Carbon dioxide capacity	36. 71

Yandell Henderson (46) reports the following results on two dogs that died during apnea:

	Arterial blood		Venous blood	
	O_2	CO_2	O_2	CO_2
First dog				
Initial content	23. 9	43. 6	24. 9	46. 2
Fatal content	28. 6	26. 4	5. 8	41. 7
Second dog				
Initial content	15. 9	37. 2	15. 2	39. 4
Fatal content	15. 8	16. 1	0. 0	33. 1

As will be noticed from a study of Van Slyke's chart, the animals which we exposed to the higher temperatures approached, or to be more exact, have reached the upper limit of pH that is compatible with life. We have, however, never seen tonic contraction or other indications of tetany that hydrogen ion concentration of this magnitude is supposed to cause. The nearest approach to it has been an extending of the limbs in a somewhat similar manner to that of the extensor thrust, but it is not in a fixed position.

V. THE RELATION BETWEEN THE CONCENTRATION OF THE SUGAR OF THE BLOOD AND THE TEMPERATURE OF THE BLOOD

The changes in the concentration of the sugar in the blood (Fig. 1) are rather hard to explain in a manner that is consistent for all of the different conditions studied. At 20° there is a fairly uniform fall throughout the six-hour period. This is in entire agreement with the observations of Scott and Hastings (47) and can hardly result from the increased time which has elapsed since the ingestion of food during the course of the experiment, as sufficient time was allowed for this factor to become constant before the first sample

was drawn. The only remaining explanation which occurs to us is that the animals are becoming progressively quieter as the experiments proceed, and consequently are mobilizing less and less sugar. Whether such a decrease in the rate of the mobilization of sugar is the direct result of lessened excitement, or whether it is due to the operation of an unknown factor which tends to equilibrate the concentration of sugar in the blood with the metabolic requirements of the organism for sugar, is a matter into which we are unable to enter at the present time. Aside from this factor, which may be assumed, for the time being, to be constant throughout the research, it is to be noted that when corresponding periods in the different series are compared, a rough agreement between the concentration of the sugar of the blood and the body temperature is noted. The series at 45° C. forms an exception to the rule, however, for at this environmental temperature the temperature of the body is almost identical with that which occurs when the animals are exposed to a temperature of 50° C. while the concentration of sugar occupies a position midway between that found at 40° and that at 50° C. This rise in the sugar of the blood seems to be associated with the environmental temperature, and is not exclusively dependent upon the body temperature and is apparently not dependent upon any emotional disturbances accompanying the exposure to the higher temperature. This seems to be shown by a comparison of the blood concentration found at the exposure to an air temperature of 50° C., with an air movement of only 50 to 60 feet per minute, during the first period of which exposure the animal attempted to escape, with that found with the same temperature but with an air movement of 224 feet per minute, when the animal showed very little excitement. The blood sugar concentration at the end of each exposure was almost identical. When water was freely drunk, the concentration of the blood sugar fell a little.

Sutton (17) found that there was a rise in the respiratory quotient during pyrexia from 0.77 to 0.916, which, using Rubner's table of combustion for fat and carbohydrate, he calculated to be equivalent to an increase in the carbohydrate consumed of five and six times the original amount. Bazett and Haldane (35) found a respiratory quotient of 1.3 in their work with hot baths. Lepine (48) attributes the hyperglycemia occasionally present in fever to an irritation of the fourth ventricle by fever toxins. The increase in concentration of sugar which Freund and Marchand (49) report in fever is only of such a degree as may be accounted for by changes in the concentration of the blood. We are not, however, able to explain our results in this manner since we found the increase in the sugar to exceed that of the total solids; in one case there was an increase of almost 100 per cent in the sugar while at the same time the total

solids increased only 25 per cent. It may be that a mechanism exists in the body that mobilizes the sugar at times of great stress, thus protecting the body proteins by means of the well-known protein-sparing action of carbohydrates and fats. Shaffer (50) showed that the ingestion of large amounts of carbohydrate was beneficial to typhoid fever patients in maintaining the nitrogen equilibrium.

VI. THE RELATION BETWEEN THE TOTAL SOLIDS OF THE BLOOD AND THE ENVIRONMENTAL TEMPERATURE

The total solids of the blood tend to increase as the environmental temperature rises, and we have been unable to observe the dilution mentioned by Barbour (51) in the report of his experiments with hot and cold baths, except in the series in which the animals drank freely of water. Our experiments seem to be more in line with the results he reports with coli fever (52). That under some conditions fluid may be drawn into the blood and then lost by excretion without any dilution of the blood was also found by Young, Breinl, Harris, and Osborn (53), who found that there was considerable increase in body temperature under certain tropical conditions of heating.

There is, no doubt, some mechanism in the body by which the total blood volume is regulated, and our results should be considered as indicating a tampering with this mechanism. The water lost to the blood must be replaced, and at high temperatures the replacement can not keep pace with the loss on account of the great drain on the organism. But fortunately there seems to be a good margin of safety; for it is not until the concentration approaches 25 that pathological symptoms seem to appear.

General Remarks on Heat Exposure

The greatest source of danger from heat exposure appears to lie in the organism itself, whose defense rests apparently on a good heart and vaso-motor mechanism for the flushing of the skin and maintaining a sufficient blood pressure, both venous and arterial. Once there is a rise in body temperature, accompanied by excitability, the general metabolism is increased and a vicious circle is inititated. There occurs no compensation by lessened heat production or by increased heat loss with the rise of body temperature. As the internal temperature rises, it appears to gain momentum, and there seems to be no way of stopping this increase outside of removing the animal to a more favorable environment. As far as our observations would indicate, the body has no power of readjusting its general metabolism on a plane of a higher body temperature.

Our results reported in the third series of experiments indicate that an increased air movement may prove temporarily beneficial

to the organism if the exposure is not prolonged for too long a period. The benefit of this increased air movement would seem to lie in the fact that it is constantly changing the immediate layer of saturated air that surrounds the body and thus hastens cooling by evaporation. According to the laws of physical equilibrium the pulmonary and cutaneous evaporation increases with the state of dryness of the atmosphere; it becomes almost double when there are 5 grams of water vapor instead of 9 in one cubic meter of air. In short, the value of the elimination of water vapor by the organism varies inversely with the hygrometric state. It would of necessity follow that the higher the relative humidity of the air, the larger must be the volume of circulating air. That an increased air movement alone is not an ideal condition is plainly shown by a comparison of the results of our third and fourth series of observation. Haldane (28) has shown that a man could stand a wet bulb temperature of 34.4° C. without any abnormal rise in rectal temperature provided there was an air movement of 170 linear feet per minute. He made no observations of the blood gases and did not state whether the man drank water freely or not during the exposure.

The benefit of drinking water freely while engaged in any occupation necessitating an exposure to abnormally high temperatures is very apparent. The animals that we lost and which showed a great concentration in the blood were small, and their death can be referred to the fact that their body surface was large in proportion to their volume. Shelford (15) reports most of the symptoms associated with heat exposure in his observations on evaporation, and states that these reactions to evaporation are produced whether the evaporation was by movement, dryness, or heat. Northwag (54) working with the tissues of water-starved birds, came to the conclusion that when death did occur from lack of water it was due to an accumulation of split products in the cells due to a lack of sufficient water to remove them. Such a condition would be rare in a death from heat exposure, as death seems to come before the circulating fluid can be so far depleted as to cause any approach to a condition of water starvation. Hill (16) estimates that a man loses 4.8 per cent of his body weight on a summer's day in 24 hours, and if he is working hard his loss is at the rate of 7.7 per cent. Hunt (55) estimates that a man needs 1,500 c. c. of water per day to satisfy the urine and feces requirements, and up to six liters to neutralize by evaporation the heat added by metabolism. In addition to this he will need a varying amount to neutralize by evaporation the heat added to the body by means of radiation or conduction. Hill warns against the loss in water of 10 per cent of the body weight.

Summary

(1) During an exposure of six hours to an environmental temperature of 20° or 30° C. there was a drop in body temperature, probably due to a decrease in muscular activity. At 40° there was an increase of 1 degree in body temperature without an initial drop. At 45° and at 50° the body temperature rose within an hour to such a height that it was deemed unsafe to continue the experiments.

(2) The oxygen capacity of the blood showed no changes during the exposure to the different temperatures that can not be accounted for by the diurnal changes in the hemoglobin or the concentration of the blood due to excessive evaporation of water.

(3) The oxygen content of the blood remained unchanged at 20°, but showed a drop at 30°, which is probably associated with the low rate of metabolism at this temperature. At 45° and 50° there is a slight increase in the oxygen content, due to the increased aeration of the blood at these temperatures; but this increase is not in direct proportion to the increased passage of air over the membranes of the mouth and throat.

(4) At temperatures of 20° and 30° the alkali reserve remains unchanged, while at 40° there is a sharp fall during the first four hours, followed by a slower fall during the next two hours. At temperatures of 45° and 50° there is a rapid depletion of the alkali reserve from the beginning, which is almost identical for each of these two temperatures.

(5) The carbon dioxide content follows the alkali reserve, except that at 30° there is a slight rise for the same reason that the oxygen content falls.

(6) The hydrogen-ion concentration of the plasma remains unchanged during an exposure of the animal to a temperature of 20°, 30°, and 40°, but decreases at temperatures of 45° and 50°, due to the excessive pulmonary ventilation at those temperatures with the consequent washing out of carbon dioxide without a compensatory loss of alkali from the blood.

(7) The concentration of blood sugar falls during an exposure to temperatures of 20° and 30°. This fall is probably associated with inactivity of the animal during the course of the experiment. At 40° it falls during the first two hours to increase during the following four hours. At 45° no change was noted during an hour's exposure, while at 50° there was a sharp rise during this time.

(8) The blood solids at 20° and 30° showed only the usual diurnal changes. At 40°, 45°, and 50° the concentration of the blood increases with the environmental temperature, no initial drop being seen.

(9) An increased air movement benefits the organism by delaying the deleterious effects, but apparently at the expense of the organism itself.

(10) The free drinking of water during an exposure to high air temperature is of greatest benefit in maintaining the organism in a normal condition.

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APPENDIX—TABLES

TABLE 1.—*Mean results for all experiments*

AIR MOVEMENT 50–60 FEET

	Number of observations	Body weight	Rectal temperature	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity Hb. content	Red power as glucose	Total solid
Chamber temperature, 20°.		*Kg*	*° C.*	*Vol. %*	*Vol %*	*Vol %*	*Vol %*	*Mg. %*	*%*
Initial	12	16 35	38 9	45 2	67.0	18 4	25 3	92	22.2
Second hour	12	16 30	38 5	45 8	66.9	19 0	25 7	87	22.4
Fourth hour	12	16 27	38 4	46 0	67 6	18.8	25 6	85	22.8
Sixth hour	12	16 25	38 5	46.0	67 9	18.8	25.5	83	22.3
Chamber temperature, 30°.									
Initial	12	16.79	38.8	45 6	62.3	19 4	24 9	95	21.3
Second hour	12	16 77	38.5	47.1	61.9	18.4	24 5	92	21.4
Fourth hour	12	16.74	38 5	48.0	62.8	18.4	24 5	92	21 4
Sixth hour	12	16.69	38.6	47.6	63.2	18.8	24.2	91	20.7
Chamber temperature, 40°.									
Initial	9	14 20	38.6	46.6	62.2	16.3	25.8	82	22.3
Second hour	9	13 96	39.0	36.7	58.2	20 0	25 5	79	23 3
Fourth hour	9	13.63	39 0	34.8	53 8	19.6	26.7	83	23.7
Sixth hour	9	13 43	39.6	33.7	53.0	18.0	26.2	84	24.0
Chamber temperature, 45°.									
Initial	8	14.00	38.6	49 5	59.8	16.6	25.8	88	21.9
First hour	8	13.60	41.5	26.7	43.7	18.7	26.8	89	23.5
Second hour of recovery	8	--------	37.68	45.9	54.3	16.6	25.0	86	22.3
Chamber temperature, 50°:									
Initial	6	14.44	38.9	48.7	57.8	14.7	22.7	85	20.3
First hour	6	14.08	41.54	27.1	39 9	16 9	24.0	108	21.8
Second hour of recovery	6	--------	38.0	46.6	55.5	15.6	22.5	81	20.5

AIR MOVEMENT 224 FEET (NO WATER)

Chamber temperature, 50°:									
Initial	6	13.85	38 8	45.6	55.8	11.7	19.6	90	18.1
First hour	6	13.6	39.2	36 4	48.8	13.4	21.3	100	19.1
Fourth hour	6	13 0	41.5	25.8	43.1	15.1	23.6	116	21.6

AIR MOVEMENT 224 FEET (WATER GIVEN)

Chamber temperature, 50°:									
Initial	6	12.6	38.7	41.3	52.7	15.7	20.1	98	20.9
First hour	6	12.68	39.4	39.1	51.9	14.6	19.6	95	19.5
Fourth hour	6	12.65	38.8	41.2	52.3	13.5	19.8	92	19.8

Table 2.—*Showing the effect of various environmental temperatures upon the concentration of the hydrogen ion and carbon dioxide of the plasma*

[Air movement 50-60 feet per minute. Wet bulb and the relative humidity same as in Series I]

Temperature of chamber (centigrade)	Before exposure		After one hour exposure		After six hours exposure	
	pH	CO_2 content	pH	CO_2 content	pH	CO_2 content
20°	7.57	52.4	7.57	52.4	7.57	55.4
40°	7.57	52.4	7.56	40.6	7.56	39.5
45°	7.57	52.4	7.79	29.0		
50°	7.57	52.4	7.83	26.3		

Table 3

[Exposure 20°; air movement 50-60 feet per minute, average wet bulb., 56, relative humidity 50, time of exposure, 6 hours]

INITIAL

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
E	46.6	72.57	17.30	22.50	83		10.20	38.77
H	40.7	67.81	21.18	24.19	72		26.10	38.93
J	37.4	67.45	21.20	23.94	71		19.30	39.20
M	49.4	66.95	17.70	23.06	111	21.3	10.90	38.60
P	41.8	68.50	20.69	30.04	96	25.1	15.30	39.22
Q	50.1	63.03	15.68	26.94	94	20.0	15.20	38.88
E	46.6	67.40	17.18	22.88	102	21.7	10.90	38.61
H	44.5	63.34	25.19	29.58	92	24.6	27.00	39.00
J	35.5	64.20	22.50	23.10	96		18.50	39.00
M	52.3	73.22	16.65	19.32	102	20.2	10.70	39.20
P	46.0	66.50	18.77	30.37	92		16.80	38.78
Q	51.8	64.20	16.30	26.90	93	22.7	15.12	38.88
Mean	45.2	67.00	18.40	25.30	92	22.2	16.35	38.92

2 HOURS

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
E	37.6	67.4	21.4	23.3	57		10.20	38.78
H	37.3	64.2	18.5	23.3	57		26.10	38.40
J	43.4	67.8	17.4	22.5	87		19.30	38.88
M	51.4	71.1	16.8	24.7	96	22.3	10.80	38.50
P	47.8	68.5	20.7	30.8	115	25.1	15.30	38.34
Q	49.7	63.6	16.5	26.3	56	21.6	15.00	37.77
E	37.9	64.1	22.7	25.1	89	21.3	10.90	38.55
H	42.5	62.6	25.5	32.6	96	25.5	27.00	38.77
J	46.2	69.4	17.2	22.9	92		18.45	39.00
M	52.3	73.2	15.3	19.9	97	20.4	10.70	38.40
P	46.2	66.1	19.2	30.6	95		16.80	38.33
Q	51.5	64.3	16.4	26.9	91	22.3	15.12	38.40
Mean	45.8	66.9	19.0	25.7	87	22.4	16.32	38.50

4 HOURS

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
E	46.4	73.0	17.4	22.5	72		10.02	38.33
H	37.2	68.0	18.4	24.3	55		26.10	38.33
J	38.2	64.3	22.7	25.1	88		19.30	38.88
M	50.9	71.6	16.0	24.7	97	20.5	10.80	38.10
P	47.5	68.5	20.7	30.8	105	25.8	15.20	38.33
Q	49.8	63.1	16.4	26.6	87	26.4	15.00	37.77
E	48.0	69.4	14.8	23.2	92	21.3	10.90	38.22
H	44.3	62.6	25.5	29.3	92	23.6	27.00	38.55
J	37.4	67.4	21.3	23.7	55		18.40	39.00
M	48.0	73.2	15.3	19.0	96	20.0	10.70	38.55
P	46.2	66.1	19.1	30.6	93		16.70	38.33
Q	51.8	64.3	16.3	26.9	91	22.5	15.12	38.50
Mean	46.0	67.6	18.8	25.6	85	22.8	16.27	38.40

Table 3—Continued

6 HOURS

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
E	47.3	73.0	16.9	22.5	68		10.10	38.78
H	36.7	68.0	21.8	24.7	58		26.10	38.33
J	38.9	69.4	21.3	23.1	58		19.30	38.88
M	51.5	71.8	16.7	24.3	92	20.4	10.76	38.10
P	47.8	68.5	21.0	30.8	101	25.5	15.20	38.33
Q	49.8	63.1	16.4	26.6	83	22.7	15.00	37.77
E	48.0	69.4	14.8	22.2	91	21 2	10.70	38.22
H	44.3	62.6	25.5	29.3	91	23.6	27.00	38.55
J	38.1	64.2	22.5	25.1	86		18.40	39.00
M	48.0	73.2	15.3	20.3	97	20.1	10.70	38.55
P	46.2	66.3	19.2	30.6	97		16.70	38.55
Q	51.6	64 4	16.3	26.7	93	22.6	15.10	38.50
Mean	46 2	67 9	18 8	25 5	84	22.3	16.25	38.50

Table 4

[Exposure, 30°, air movement 50-60 feet per minute, average wet bulb, 68; relative humidity, 39; time of exposure, 6 hours]

INITIAL

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos.	Body temperature
E	41.5	65.8	19 6	23.4	129	21.8	9.91	39.22
E	41.8	53.8	19.9	23.6	92	22.6	11.00	39.00
H	43.9	65.9	22.7	27.0	97		27 10	38.77
H	45.4	57 6	24.9	30 4	90		28 60	39.00
J	44.1	65.8	22 9	24 0	74		19.00	39.20
J	37.6	58 4	23 4	25 6	105	20 8	19.30	38.88
M	54.4	70 7	11.2	17 4	98	17.0	10 56	38.33
M	49 6	57.7	16.5	20 3	90	18.3	11.40	38.33
P	45.7	66.5	22 5	30 4	96	25 1	16.60	38.66
P	44.7	59.9	18.6	26.1	81	22.7	17 20	38.77
Q	48.4	62.6	14.1	25.2	93	21.7	15 62	38.88
Q	49 8	63.1	16.7	26 1	94	21.4	15 20	38 88
Mean	45 6	62.3	19 4	24 9	95	21.3	16.79	38.82

2 HOURS

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos.	Body temperature
E	42.0	65 8	18.1	23.0	141	21.9	9.90	38.77
E	44.6	58.7	16.7	22.8	86	20.8	10.92	38.44
H	45 7	65.9	22.5	26 9	98		27.00	38.44
H	44.4	58.2	24.5	30.4	87		28.60	38.77
J	50.9	60.5	14.9	24.9	74		19 00	39.20
J	42.8	53 3	20.4	23.8	96	20.7	19.25	38.66
M	56.6	70.7	11.2	13.9	97	16 5	10.48	38.33
M	47.7	57.0	16.1	20.3	85	18 3	11.40	38.33
P	45.4	66.8	22.8	30.4	91	25.6	16.55	38.44
P	48.7	59.9	18.6	26.1	85	25.2	17.20	38.33
Q	46.0	62.2	18.2	25.5	82	22.0	15.55	38.44
Q	50.1	63.2	16 9	26.2	87	21 7	15.20	38.33
Mean	47.1	61 9	18.4	24 5	92	21 4	16.77	38.54

4 HOURS

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos.	Body temperature
E	44.5	65.9	17.6	22.1	117	21.1	9.82	38.77
E	48.7	64.8	14.8	22.2	83	22.6	10.88	38.33
H	44.5	66.0	23.9	27.5	98		26 80	38.50
H	44.2	58.2	24.8	30.6	87		28 50	38.66
J	48.3	59 3	20.3	24.8	96		19.00	39.20
J	43 4	60 0	20.4	23.8	96	21 0	19.25	38.77
M	57.2	70.5	9.4	14.2	98	16 1	10.42	38.10
M	47 4	57.6	16.8	20.3	87	20.3	11.40	38.33
P	46.6	66.4	21.4	30.5	85	25.0	16.55	38.33
P	50.4	59.9	19.4	26 1	90	23.6	17.20	38.33
Q	50.3	61.8	14.1	25.8	83	21.8	15.46	38.62
Q	50.1	63.2	16.5	26.2	85	22.0	15.16	37.77
Mean	48.0	62.8	18.4	24.5	92	21.4	16.74	38.46

Table 4—Continued

6 HOURS

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
E	42.5	65.9	17.6	21.2	132	21.6	9.78	38.88
E	44.6	63.8	14.8	23.2	77	21.9	10.80	38.44
H	43.3	65.9	26.7	27.5	98	-	26.70	38.66
H	44.3	58.2	24.8	30.7	86	-	28.50	38.66
J	46.3	62.5	20.3	24.8	87	-	19.00	39.20
J	46.4	62.6	20.2	22.8	85	19.3	19.25	38.88
M	58.7	70.7	10.9	14.2	91	15.9	10.42	38.33
M	49.0	57.2	16.7	20.6	87	18.2	11.40	38.33
P	45.4	66.6	22.1	30.3	87	24.9	16.50	38.33
P	50.4	59.9	18.5	26.1	90	23.2	17.20	38.44
Q	50.4	62.1	15.9	25.8	87	21.9	15.45	38.33
Q	49.9	63.2	14.9	26.1	85	21.8	15.16	38.23
Mean	47.6	63.2	18.8	24.2	91	20.7	16.69	38.50

Table 5

[Exposure, 40°; air movement, 50-60 feet per minute; average wet bulb, 80, relative humidity, 33; time of exposure, 6 hours]

INITIAL

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
E	38.4	66.5	16.8	23.4	96	22.4	10.48	38.66
E	47.4	64.5	14.9	25.0	93	21.1	11.20	38.33
J	39.0	62.1	18.2	23.6	102	23.6	10.30	39.00
M	48.6	63.4	15.1	23.1	87	19.3	10.66	38.77
M	51.0	59.2	15.0	24.7	87	20.7	11.94	38.44
P	47.9	64.5	15.6	29.4	80	25.4	16.80	38.66
P	49.4	57.6	15.8	28.4	82	23.3	16.60	38.66
Q	51.1	64.8	16.7	23.8	99	22.6	15.20	38.44
Q	46.7	57.2	19.1	26.9	86	22.4	15.92	38.88
Mean	46.6	62.2	16.3	25.8	82	22.3	14.20	38.63

2 HOURS

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
E	34.0	58.1	15.7	23.3	70	23.7	10.06	38.77
E	37.5	57.6	15.7	27.2	75	22.2	10.91	38.66
J	26.5	62.1	23.5	25.3	87	22.7	19.00	39.00
M	41.4	65.4	19.7	23.2	81	19.9	10.46	38.66
M	37.7	55.0	16.6	24.5	67	21.1	11.62	39.22
P	35.6	60.0	25.7	30.8	87	25.9	16.52	39.55
P	42.3	55.7	29.3	27.9	81	23.1	16.10	38.88
Q	43.4	60.5	22.1	29.7	86	25.7	15.00	38.88
Q	32.6	49.4	21.2	27.5	73	26.0	15.60	39.44
Mean	36.7	58.2	20.0	25.5	79	23.3	13.90	39.00

4 HOURS

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
E	33.5	49.3	17.3	27.9	79	25.0	9.90	38.88
E	37.4	56.6	14.6	27.9	74	22.0	10.71	38.33
J	22.5	49.9	18.1	19.9	103	26.0	18.27	40.00
M	38.8	63.4	18.8	23.1	81	21.5	10.30	38.66
M	36.0	52.8	21.6	25.8	72	23.1	11.44	38.88
P	31.7	53.3	27.3	32.5	82	26.3	16.22	39.61
P	34.0	49.6	20.2	28.3	78	24.2	15.82	39.77
Q	39.3	57.3	18.5	28.8	87	23.0	14.72	38.66

Table 5—Continued

6 HOURS

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
E	31 6	49 3	14.7	26.3	80	23.0	9.68	38.77
E	36 3	55 2	14.7	25.3	74	22.1	10.51	38.88
J	22 5	48.9	16 3	17.2	92	29.4	17.96	42.33
M	40 1	65 0	18.8	23.1	87	22.2	10.24	38.66
M	31 3	46 8	18.0	26.0	86	22.4	11.20	39.44
P	30 7	51 3	21.7	32.5	82	26.7	15.98	40.44
P	30.2	56.1	16.5	30.9	77	22.6	15.56	40.50
Q	38.5	53.7	18.2	27.9	85	24.5	14 52	38.88
Q	42.0	51.0	22.9	26 6	96	23.5	15 22	38.88
Mean	33 7	53 0	18.0	26 2	84	24 0	13 43	39.64

Table 6

[Exposure 45°; air movement, 50-60 foot per minute; average wet bulb, 85; relative humidity, 32, time of exposure, 1 hour]

INITIAL

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos.	Body temperature
E	51.6	61 8	15.4	24.7	104	21 1	11.26	38.62
M	56.5	68 2	14.6	24.8	99	20.2	12.34	38.44
M	48.3	54 8	13.2	22.2	81	19.6	12.55	38.66
P	48 5	63 6	15 9	28.9	86	23 8	16.28	38.44
P	42.4	56 8	20.4	26.7	69	24 0	17.55	38.88
Q	53.4	58 4	16.5	26 2	96	21.7	15.32	38.66
Q	51 8	58 7	15 7	27 6	89	22 3	15 90	38.77
R	43 3	56 4	21 2	25 1	84	22 4	10.80	38.66
Mean	49 5	59.8	16 6	25.8	88	21.9	14.00	38.63

1 HOUR

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos.	Body temperature
E	23 0	43.2	14.2	25 5	90	23.7	10 90	40 33
M	27 2	46.8	18.1	24.0	86	21.1	11 80	41.22
M	32 8	42 7	15.8	20 4	87	21.6	12.30	41.22
P	28.2	46 1	16 5	30 6	98	25.5	15 90	42 20
P	32 9	44 7	20.4	27 6	75	25 3	17.20	41.55
Q	30.8	42 0	18.0	25 5	98	22 9	15.12	41.22
Q	21.5	42 9	23 7	31 2	87	23 9	15 28	41.88
R	17.1	41.2	22.9	29.6	96	24.4	10.32	41.20
Mean	26.7	43 7	18.7	26.8	89	23.5	13.60	41.45

AFTER 2 HOURS' RECOVERY

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos.	Body temperature
E	38.3	49.7	16 0	24.7	99	24 9		38.33
M	48 5	53.2	11.9	20.9	94	17.8		36.66
M	48 3	58.8	14.9	22.6	93	20.1		36.66
P	45 3	54.7	18.5	27.9	91	24.7		37.77
P	41.8	56.1	20.2	26 7	69	24.2		38.10
Q	51.8	52 4	15.4	24 2	87	21.6		37.77
Q	47.4	51.8	18.4	25.6	93	21.9		37.90
R	46 2	57.4	17.6	27.4	84	23.3		37.44
Mean	45 9	54.3	16 6	25.0	90	22.3		37.56

TABLE 7

[Exposure 50°; air movement, 50-60 feet per minute; average wet bulb, 88; relative humidity, 28; time of exposure, 1 hour]

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos.	Body temperature
INITIAL								
P	49 0	55.9	15.8	25.7	94	24.01	16.72	39.22
M	47.1	56.3	12.1	17.5	90	16.4	11.42	30.00
Q	53 6	59.7	17.4	24.6	90	21.2	15.64	30.10
P	45 2	55.6	17.1	25.3	69	21.9	16.72	38.33
M	51 9	62.8	10 7	19.8	78	17.8	11.20	38.33
Q	45.4	56 7	15.1	23.2	90	20.4	14.72	39.22
Mean	48.7	57.8	14 7	22.7	85	20.3	14.4	38.86
1 HOUR								
P	30.6	41.9	20.2	22.3	116	23.3	16 45	42.50
M	28 8	32.2	13 4	25.6	108	18.2	11.16	41.20
Q	25 8	42.6	17 4	26 3	117	23.4	15.21	41.77
P	22 8	41 0	19 3	27 4	103	24.1	16.30	42.90
M	27 0	41 1	15.2	19.8	94	20.3	10.90	40.10
Q	27 8	40.8	16.1	22.4	108	21.3	14.36	40.77
Mean	27 1	39 9	16.9	24.0	108	21.8	14.06	41.54
AFTER 2 HOURS' RECOVERY								
P	37 9	46 0	19 8	24.3	90	22 1		38.22
M	50 6	56 9	13 4	18 0	90	16 5		38.10
Q	53 0	56 0	17.4	25 1	81	22 6		37.77
P	43 0	55 3	17 5	25 6	81	23 6		38.44
M	49 8	61.9	11.5	19.8	64	18 1		37.66
Q	45 4	56 7	14 4	22.4	80	20 4		37.77
Mean	46 6	55 5	15.6	22.5	81	20 5		37.99

TABLE 8

[Exposure, 50°, air movement, 224 feet per minute; average wet bulb, 91; relative humidity, 33, time of exposure, 4 hours]

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
INITIAL								
P	46 4	53.8	7 7	16.7	96	18.1	14.40	38.77
S	47 5	54 4	7 9	16.9	96	18.1	16.40	39.00
U	40 3	59 5	23 9	27.9	91	22.9	9.20	38.88
P	45 4	57.6	11.3	16.7	91	17.9	14.62	38.88
P	47 0	58.3	9 6	15.9	94	16.7	16 50	38.88
M	46 9	51.3	9.5	24.3	74	15.1	12.00	38.77
Mean	45.6	55 8	11 7	19.7	90	18 1	13.85	38.86
1 HOUR								
P	38.3	51 8	9 5	17 6	101	19.5	14.2	39.0[illegible]
S	38 2	53.5	9.6	17.8	101	19.5	16.2	39 2[illegible]
U	37 3	48 0	25.6	31.1	105	23 3	8.9	39.2[illegible]
P	40.3	54.7	12.8	17.6	105	18.6	14.4	39.4[illegible]
P	33.7	42.8	12.3	15 9	103	16.9	16.3	30.2[illegible]
M	30.7	41 8	10.6	27.8	83	16.5	11.8	39.2[illegible]
Mean	36.4	48.8	13 4	21.3	100	19.1	13.6	39.2[illegible]
4 HOURS								
P	25 0	47.5	14.8	19 3	114	21.7	13.6	41.66
S	25.6	47.7	14 8	19 6	114	21.7	15.6	41.55
U	23.2	48.0	23.8	32.3	114	28.9	8 2	41.20
P	28.0	44.2	12.8	19.4	114	20.4	13.9	41.27
P	28 6	40.8	12.5	16.0	110	17.9	15.7	41.55
M	24.3	30.1	11.4	35.0	132	19.1	11.2	41.66
Mean	25.8	43.1	15.1	23.6	116	21.6	13.0	41.48

TABLE 9

[Exposure 50°; air movement, 224 feet per minute; average wet bulb, 91; relative humidity, 33; time of exposure, 4 hours. Water given]

INITIAL

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
P	41.1	46.8	11.0	14.5	100	19.5	14.08	38.88
P	44.3	57.6	12.5	18.5	92	19.7	13.90	38.88
U	42.1	57.2	19.8	24.8	94	23.1	10.90	38.62
T	41.7	57.0	18.5	21.8	96	21.4	11.44	38.88
P	36.6	48.1	10.8	16.1	105	18.8	14.35	38.77
U	42.1	49.6	20.8	25.1	98	22.8	10.92	38.44
Mean	41.3	52.7	15.7	20.1	98	20.9	12.59	38.77

1 HOUR

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
P	33.3	47.4	12.8	15.9	100	19.3	14.08	40.00
P	44.3	57.6	12.5	18.5	92	18.7	13.93	38.88
U	40.1	57.5	16.6	23.8	94	20.4	10.98	39.66
T	39.8	51.2	18.5	22.1	87	20.1	11.35	40.00
P	36.6	48.0	10.9	14.4	105	17.5	14.55	38.88
U	40.2	49.6	16.0	22.9	89	20.9	11.20	39.22
Mean	39.1	51.9	14.6	19.6	95	19.5	12.68	39.41

4 HOURS

Dog	CO_2 content	CO_2 capacity	O_2 content	O_2 capacity	Reducing power as glucose	Total blood solids	Weight, kilos	Body temperature
P	36.4	47.7	10.8	16.9	104	19.2	14.10	38.77
P	44.3	57.6	12.5	18.5	94	19.2	13.90	38.88
U	40.1	57.2	16.6	23.8	94	20.5	10.90	38.88
T	43.2	53.7	18.5	22.4	87	20.1	11.29	39.10
P	38.6	48.1	9.1	14.4	93	18.2	14.45	38.77
U	44.7	49.6	13.4	22.9	78	21.4	11.12	38.88
Mean	41.2	52.3	13.5	19.8	92	19.8	12.62	38.88

HEALTH SECTION OF THE LEAGUE OF NATIONS UTILIZES WIRELESS

The Health Section of the League of Nations has inaugurated a wireless service of health news, with regular weekly messages, from the Far Eastern Bureau at Singapore to headquarters at Geneva. The first message was sent April 3, 1925, and included reports for the week ended March 28, 1925. Two of these messages appear on page 915 of this issue of the Public Health Reports.

DEATHS DURING WEEK ENDED APRIL 18, 1925

Summary of information received by telegraph from industrial insurance companies for week ended April 18, 1925, and corresponding week of 1924. (From the Weekly Health Index, April 22, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended April 18, 1925	Corresponding week, 1924
Policies in force	59, 446, 007	55, 677, 863
Number of death claims	13, 096	10, 656
Death claims per 1,000 policies in force, annual rate	11.5	10.0

***Deaths from all causes in certain large cities of the United States during the week ended April 18, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924.** (From the Weekly Health Index, April 22, 1925, issued by the Bureau of the Census, Department of Commerce)*

City	Week ended Apr. 18, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate week ended Apr. 18, 1925[2]
	Total deaths	Death rate[1]		Week ended Apr. 18, 1925	Corresponding week, 1924	
Total (64 cities)	7,662	14.5	[3] 14.0	930	[3] 935	
Akron	23			6	5	66
Albany[4]	44	19.2	18.9	1	5	22
Atlanta	82	18.4	19.0	7	6	
Baltimore[4]	246	16.1	14.0	29	16	85
Birmingham	70	17.7	16.9	10	9	
Boston	246	16.4	16.6	36	31	95
Bridgeport	34			3	2	18
Buffalo	163	15.3	15.1	24	30	68
Cambridge	39	18.1	13.5	8	3	138
Camden	48	19.5	18.2	9	9	148
Chicago[4]	745	13.0	12.0	110	104	97
Cincinnati	135	17.2	18.0	6	10	35
Cleveland	198	11.0	12.2	29	24	72
Columbus	64	12.2	14.4	4	11	38
Dallas	54	14.6	13.3	5	6	
Dayton	39	11.8	17.3	8	6	128
Denver	90			10	8	
Des Moines	25	8.7	13.7	1	2	17
Detroit	273			48	46	81
Duluth	26	12.3	11.1	7	5	148
Erie	40			3	2	59
Fall River[4]	43	18.5	11.6	6	6	86
Flint	29			7	5	115
Fort Worth	38	13.0	8.1	3	4	
Grand Rapids	34	11.8	13.0	7	9	109
Houston	43			9	8	
Indianapolis	97	14.1	12.5	1	9	7
Jacksonville, Fla	30	14.9	23.4	1	3	22
Jersey City	73	12.1	14.2	11	9	77
Kansas City, Kans	37	15.6	17.6	5	5	105
Kansas City, Mo	81	11.5	15.9	13	14	
Los Angeles	223			26	31	72
Louisville	86	17.3	18.6	10	7	87
Lowell	35	15.7	11.7	5	4	87
Memphis	68	20.3	22.1	10	10	
Milwaukee	166	17.3	10.9	19	19	87
Minneapolis	121	14.8	12.4	22	20	118
Nashville[4]	34	14.3	20.7	3	4	
New Bedford	34	13.1	7.9	3	5	50
New Haven	42	12.2	10.1	6	1	78
New Orleans	162	20.4	18.0	16	18	
New York	1,628	13.9	13.2	206	211	82
Bronx Borough	176	10.2	11.3	19	19	66
Brooklyn Borough	512	11.9	11.8	70	73	73
Manhattan Borough	757	17.5	15.6	94	101	94
Queens Borough	135	12.3	9.7	15	11	74
Richmond Borough	48	18.7	20.7	8	7	144
Newark, N. J	132	15.2	13.8	17	16	78
Norfolk	37	11.4	11.1	4	2	71
Oakland	63	12.9	12.0	10	6	117
Oklahoma City	19	9.3	9.5	1	4	
Omaha	66	16.3	19.0	8	14	77
Paterson	47	17.3	14.8	7	1	117
Philadelphia	553	14.6	15.0	55	68	69
Pittsburgh	204	16.8	17.4	25	31	88
Portland, Oreg	81	15.0	11.8	9	6	93
Providence	80	17.0	15.6	10	12	80
Richmond	65	18.2	15.6	4	5	49
Rochester	85	13.4		11		87
St. Louis	222	14.1	16.2	20	20	
St. Paul	76	16.1	11.8	7	7	60
Salt Lake City[4]	34	13.6	13.0	1	9	16

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 62 cities.
[4] Deaths for week ended Friday, Apr. 17, 1925.

Deaths from all causes in certain large cities of the United States during the week ended April 18, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, April 22, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued.

City	Week ended Apr. 18, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate week ended Apr. 18, 1925
	Total deaths	Death rate		Week ended Apr. 18, 1925	Corresponding week, 1924	
San Antonio	63	16.6	18.5	14	11	
San Francisco	171	16.0	12.3	15	11	86
Schenectady	21	10 7	14.0	0	3	0
Seattle	74			6	5	61
Somerville	18	9.2	10.4	3	1	80
Spokane	27			3	5	65
Springfield, Mass	51	17.4	13.0	4	4	60
Syracuse	47	12.8	14 1	6	8	75
Tacoma	25	12.5	10 1	4	7	95
Toledo	80	14 5	11 3	5	7	45
Trenton	33	13 0	13.3	5	7	81
Utica	45	21.9		4		82
Washington, D. C	159	16.7	13.7	23	15	129
Waterbury	22			4	4	88
Wilmington, Del	30	12.8	17.0	2	7	46
Worcester	64	16.8	15 7	6	4	69
Yonkers	21	9 8	10 0	3	4	66
Youngstown	37	12.1	11 4	6	10	76

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended April 25, 1925

ALABAMA	Cases
Chicken pox	55
Dengue	1
Diphtheria	5
Dysentery	7
Influenza	155
Malaria	50
Measles	17
Mumps	37
Pellagra	25
Pneumonia	98
Scarlet fever	16
Smallpox	129
Tetanus	1
Tuberculosis	71
Typhoid fever	18
Whooping cough	30

ARIZONA	Cases
Diphtheria	4
Measles	8
Mumps	2
Pneumonia	2
Scarlet fever	5
Trachoma	32
Tuberculosis	4
Whooping cough	3

ARKANSAS	Cases
Cerebrospinal meningitis	1
Chicken pox	22
Diphtheria	3
Hookworm disease	3
Influenza	133
Malaria	63
Measles	20
Mumps	34
Pellagra	12
Scarlet fever	4
Smallpox	17
Tuberculosis	17
Typhoid fever	13
Whooping cough	23

CALIFORNIA	Cases
Cerebrospinal meningitis—Fresno	2
Diphtheria	102
Influenza	36
Lethargic encephalitis:	
Los Angeles	2
Oakland	1
Scattering	1
Measles	105
Poliomyelitis:	
Los Angeles	5
Los Angeles County	2
National City	2
Oakland	1
San Bernardino	1
Scarlet fever	120
Smallpox:	
Long Beach	10
Los Angeles	47
Los Angeles County	9
Monterey County	10
Oakland	14
Riverside County	14
San Diego	9
San Francisco	17
Scattering	47
Typhoid fever	10

COLORADO

(Exclusive of Denver)

	Cases
Chicken pox	18
Diphtheria	14
Measles	2
Mumps	9
Pneumonia	3
Scarlet fever	24
Smallpox	2
Tetanus	1
Tuberculosis	21
Typhoid fever	3
Whooping cough	9

CONNECTICUT

	Cases
Chicken pox	24
Conjunctivitis (infectious)	1
Diphtheria	24
German measles	28
Influenza	17
Measles	89
Mumps	11
Pneumonia (all forms)	63
Poliomyelitis	2
Scarlet fever	81
Septic sore throat	6
Trichinosis	1
Tuberculosis (all forms)	47
Typhoid fever	1
Whooping cough	91

DELAWARE

Chicken pox	1
Diphtheria	5
Measles	14
Mumps	5
Pneumonia	1
Scarlet fever	6
Tuberculosis	3
Whooping cough	2

FLORIDA

Cerebrospinal meningitis	1
Chicken pox	12
Diphtheria	4
Influenza	7
Malaria	12
Measles	2
Mumps	73
Pneumonia	6
Poliomyelitis	2
Scarlet fever	7
Smallpox	3
Tetanus	1
Tuberculosis	23
Typhoid fever	15
Whooping cough	9

GEORGIA

Chicken pox	58
Conjunctivitis (acute)	3
Diphtheria	13
Dysentery	29
Hookworm disease	5
Influenza	214
Leprosy	1
Malaria	42
Measles	20
Mumps	87
Pellagra	17
Pneumonia	75
Scarlet fever	5
Septic sore throat	9
Smallpox	11
Tuberculosis	25
Typhoid fever	10
Whooping cough	34

ILLINOIS

	Cases
Cerebrospinal meningitis:	
Du Page County	1
Hardin County	1
St. Clair County	1
Winnebago County	1
Diphtheria:	
Cook County	67
Scattering	24
Influenza	55
Lethargic encephalitis:	
McDonough County	1
Richland County	1
Measles	1,641
Pneumonia	419
Scarlet fever:	
Cook County	301
Madison County	13
Ogle County	8
Peoria County	8
Sangamon County	9
Stephenson County	14
Scattering	98
Smallpox:	
Madison County	13
Union County	11
Scattering	31
Tuberculosis	235
Typhoid fever	18
Whooping cough	405

INDIANA

Chicken pox	62
Diphtheria	33
Influenza	80
Measles	148
Mumps	5
Pneumonia	13
Scarlet fever:	
Elkhart County	15
Lake County	17
St. Joseph County	11
Vanderburgh County	12
Vigo County	11
Washington County	16
Scattering	94
Smallpox	70
Tuberculosis	34
Typhoid fever	8
Whooping cough	22

IOWA

Diphtheria	26
Scarlet fever	25
Smallpox	20

KANSAS

Cerebrospinal meningitis	1
Chicken pox	87
Diphtheria	13
Dysentery (amebic)	1
German measles	1
Influenza	30
Measles	18
Mumps	214
Pneumonia	51
Scarlet fever	117
Smallpox	9
Tuberculosis	43
Typhoid fever	3
Whooping cough	15

LOUISIANA

	Cases
Diphtheria	13
Dysentery (epidemic)	1
Hookworm disease	7
Influenza	37
Malaria	13
Pellagra	9
Pneumonia	52
Scarlet fever	17
Smallpox	25
Tuberculosis	32
Typhoid fever	19
Whooping cough	13

MAINE

	Cases
Cerebrospinal meningitis	1
Chicken pox	20
Diphtheria	1
German measles	3
Influenza	83
Measles	26
Mumps	88
Paratyphoid fever	4
Pneumonia	16
Scarlet fever	17
Tuberculosis	13
Typhoid fever	1
Whooping cough	3

MARYLAND [1]

	Cases
Chicken pox	90
Diphtheria	31
Dysentery	1
German measles	6
Influenza	73
Measles	38
Mumps	107
Ophthalmia neonatorum	1
Pneumonia (all forms)	117
Scarlet fever	66
Smallpox	2
Tetanus	2
Tuberculosis	75
Typhoid fever	6
Whooping cough	97

MASSACHUSETTS

	Cases
Cerebrospinal meningitis	1
Chicken pox	142
Conjunctivitis (suppurative)	17
Diphtheria	91
German measles	220
Hookworm disease	1
Influenza	34
Measles	1,093
Mumps	66
Ophthalmia neonatorum	30
Pneumonia (lobar)	143
Scarlet fever	270
Septic sore throat	2
Tuberculosis (all forms)	139
Typhoid fever	11
Whooping cough	127

MICHIGAN

	Cases
Diphtheria	61
Measles	240
Pneumonia	152
Scarlet fever	364
Smallpox	16
Tuberculosis	99
Typhoid fever	4
Whooping cough	139

[1] Week ended Friday.

MINNESOTA

	Cases
Cerebrospinal meningitis	1
Chicken pox	70
Diphtheria	56
Influenza	6
Lethargic encephalitis	1
Measles	20
Pneumonia	2
Poliomyelitis	1
Scarlet fever	253
Smallpox	25
Tuberculosis	98
Typhoid fever	1
Whooping cough	19

MISSISSIPPI

	Cases
Diphtheria	4
Scarlet fever	6
Smallpox	18
Typhoid fever	16

MISSOURI

(Exclusive of Kansas City)

	Cases
Cerebrospinal meningitis	1
Chicken pox	68
Diphtheria	70
Influenza	21
Malaria	4
Measles	24
Mumps	56
Pneumonia	10
Scarlet fever	261
Septic sore throat	3
Smallpox	2
Tuberculosis	72
Typhoid fever	6
Whooping cough	25

MONTANA

	Cases
Cerebrospinal meningitis	1
Chicken pox	9
Diphtheria	6
German measles	70
Influenza	3
Measles	11
Mumps	17
Pneumonia	3
Rocky Mountain spotted fever:	
Delphia	1
Myers	1
Scarlet fever	43
Smallpox	7
Tuberculosis	2
Typhoid fever	1

NEBRASKA

	Cases
Chicken pox	21
Diphtheria	14
Influenza	13

NEBRASKA—continued

	Cases
Mumps	3
Pneumonia	1
Scarlet fever	25
Smallpox	35
Tuberculosis	3
Typhoid fever	1
Whooping cough	8

NEW JERSEY

Cerebrospinal meningitis	1
Chicken pox	142
Diphtheria	67
Influenza	17
Measles	388
Pneumonia	158
Scarlet fever	247
Smallpox	13
Typhoid fever	7
Whooping cough	272

NEW MEXICO

Cerebrospinal meningitis	1
Chicken pox	6
Conjunctivitis	1
German measles	1
Influenza	161
Measles	14
Mumps	15
Pneumonia	3
Scarlet fever	13
Septic sore throat	1
Tuberculosis	23
Typhoid fever	2
Whooping cough	9

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	1
Diphtheria	76
Influenza	73
Lethargic encephalitis	1
Measles	692
Pneumonia	381
Poliomyelitis	1
Scarlet fever	318
Smallpox	1
Typhoid fever	14
Whooping cough	219

NORTH CAROLINA

Chicken pox	114
Diphtheria	19
German measles	1
Measles	14
Ophthalmia neonatorum	1
Scarlet fever	31
Septic sore throat	4
Smallpox	110
Trachoma	1
Typhoid fever	5
Whooping cough	104

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Cerebrospinal meningitis—Washington County	1
Chicken pox	27

OKLAHOMA—continued

	Cases
Diphtheria	10
Influenza	93
Mumps	21
Pneumonia	50
Scarlet fever:	
Washington County	13
Scattering	9
Smallpox	10
Typhoid fever	3
Whooping cough	25

OREGON

Cerebrospinal meningitis	3
Chicken pox	26
Diphtheria:	
Portland	16
Scattering	12
Influenza	75
Measles	4
Mumps	20
Pneumonia	9
Scarlet fever	20
Septic sore throat	1
Smallpox	11
Tuberculosis	30
Typhoid fever	1
Whooping cough	24

SOUTH DAKOTA

Chicken pox	4
Diphtheria	1
Poliomyelitis	1
Scarlet fever	30
Smallpox	2
Whooping cough	1

TEXAS

Cerebrospinal meningitis	3
Chicken pox	43
Dengue	2
Diphtheria	11
Dysentery (epidemic)	1
Influenza	138
Measles	5
Mumps	27
Ophthalmia neonatorum	1
Pellagra	13
Pneumonia	22
Scarlet fever	12
Smallpox	46
Trachoma	2
Tuberculosis	27
Typhoid fever	13
Whooping cough	37

VERMONT

Chicken pox	8
Diphtheria	2
Measles	8
Mumps	42
Scarlet fever	10
Typhoid fever	1
Whooping cough	3

VIRGINIA

Lethargic encephalitis—Augusta County	1
Smallpox—Prince Edward County	1

WASHINGTON

	Cases
Cerebrospinal meningitis:	
Pierce County	1
Spokane	1
Chicken pox	101
Diphtheria	24
German measles	48
Measles	4
Mumps	146
Scarlet fever	23
Smallpox	47
Tuberculosis	21
Typhoid fever	5
Whooping cough	145

WEST VIRGINIA

Diphtheria	3
Scarlet fever	26
Smallpox	5
Typhoid fever	4

WISCONSIN

	Cases
Milwaukee:	
Chicken pox	34
Diphtheria	16
German measles	218
Influenza	4
Measles	245
Mumps	94
Ophthalmia neonatorum	1
Pneumonia	45
Poliomyelitis	1
Scarlet fever	26
Smallpox	12
Tuberculosis	53
Whooping cough	26
Scattering	
Chicken pox	104
Diphtheria	29
German measles	268
Influenza	386
Measles	204
Mumps	284
Pneumonia	36
Scarlet fever	124
Smallpox	16
Tuberculosis	27
Typhoid fever	7
Whooping cough	52

WYOMING

Chicken pox	5
Diphtheria	3
Influenza	1
Measles	16
Mumps	21
Pneumonia	1
Rocky Mountain spotted fever	4
Scarlet fever	4
Whooping cough	6

Reports for Week Ended April 18, 1925

DISTRICT OF COLUMBIA

	Cases
Chicken pox	22
Diphtheria	5
Influenza	1
Measles	47
Pneumonia	38
Scarlet fever	30
Smallpox	6
Tuberculosis	27
Whooping cough	8

MAINE [1]

	Cases
Cerebrospinal meningitis	3
Chicken pox	73
Diphtheria	8
Dysentery	2
German measles	4
Influenza	760
Measles	51
Mumps	259
Pneumonia	56
Poliomyelitis	5
Scarlet fever	56
Septic sore throat	1
Tuberculosis	27
Typhoid fever	7
Vincent's angina	4
Whooping cough	13

[1] Reports for weeks ended Apr. 11 and 18, 1925.

NEBRASKA

Chicken pox	13
Diphtheria	11
Influenza	56
Measles	5
Mumps	25
Pneumonia	1
Scarlet fever	18
Smallpox	22
Tuberculosis	2
Whooping cough	10

NORTH DAKOTA

Chicken pox	10
Diphtheria	7
Influenza	2
Measles	2
Mumps	8
Pneumonia	20
Scarlet fever	32
Smallpox	3
Trachoma	1
Tuberculosis	1
Whooping cough	44

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
February, 1925										
California	4	542	444	5	186	0	12	618	704	27
Utah	6	39	30		39			62	18	1
March, 1925										
Arkansas	2	19	1,790	171	146	48	0	30	31	46
Delaware		10	9	4	7			23		
Idaho		5	7					27		6
Iowa		41			16			132	40	2
Kansas	5	114	458	0	47	1	2	596	44	10
Maine	0	24	501	0	50	0	1	162	0	11
Maryland	4	137	289	0	159	0	0	336	2	27
Mississippi		71	17,359	3,196	788	496	2	21	155	91
New Jersey	10	393	162		1,057		4	1,303	41	46
North Carolina	4	130			276			100	250	12
North Dakota		17	1		9		1	273	36	3
Ohio	10	406	278	0	959	0	2	2,338	576	46
Oregon	12	115	620		20		1	100	96	9
Rhode Island	2	39	26	1		0	0	118	1	2
South Dakota	1	32	24		10		1	213	47	9
Virginia	7	113	6,187	77	644	4	5	191	22	40
Wyoming		1	3		30			29	6	32

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended April 11, 1925:

Los Angeles, Calif.

Week ended Apr. 11, 1925:
- Number of rats examined — 5,123
- Number of rats found to be plague-infected — 4
- Number of squirrels examined — 921
- Number of squirrels found to be plague-infected — 0

Totals, Nov. 5, 1924, to Apr. 11, 1925:
- Number of rats examined — 81,604
- Number of rats found to be plague-infected — 173
- Number of squirrels examined — 7,504
- Number of squirrels found to be plague-infected — 9

Date of discovery of last plague-infected rodent, Apr. 23, 1925.
Date of last human case, Jan. 15, 1925.

Oakland, Calif.

(Including other East Bay communities)

Week ended Apr. 11, 1925:
- Number of rats trapped — 2,675
- Number of rats found to be plague-infected — 0

Totals, Jan. 1 to Apr. 11, 1925:
- Number of rats trapped — 35,257
- Number of rats found to be plague-infected — 21

Date of discovery of last plague-infected rat, Mar. 4, 1925.
Date of last human case, Sept. 10, 1919.

New Orleans, La.

Week ended Apr. 11, 1925:	
Number of vessels inspected	403
Number of inspections made	1,066
Number of vessels fumigated with cyanide gas	36
Number of rodents examined for plague	5,062
Number of rodents found to be plague-infected	0
Totals, Dec. 5, 1924, to Apr. 11, 1925:	
Number of rodents examined for plague	75,573
Number of rodents found to be plague-infected	12

Date of discovery of last plague-infected rat, Jan. 17, 1925.
Date of last human case occurring in New Orleans, Aug. 20, 1920.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended April 11, 1925, 33 States reported 1,215 cases of diphtheria. For the week ended April 12, 1924, the same States reported 1,617 cases of this disease. One hundred and four cities, situated in all parts of the country and having an aggregate population of more than 28,800,000, reported 875 cases of diphtheria for the week ended April 11, 1925. Last year for the corresponding week they reported 1,001 cases. The estimated expectancy for these cities was 971 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Twenty-eight States reported 4,265 cases of measles for the week ended April 11, 1925, and 16,042 cases of this disease for the week ended April 12, 1924. One hundred and four cities reported 2,932 cases of measles for the week this year and 6,236 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 33 States—this year, 3,576 cases; last year, 3,749; 104 cities—this year, 2,026; last year, 1,795; estimated expectancy, 1,059 cases.

Smallpox.—For the week ended April 11, 1925, 33 States reported 693 cases of smallpox. Last year for the corresponding week they reported 1,435 cases of smallpox. One hundred and four cities reported smallpox for the week as follows: 1925, 282 cases; 1924, 536 cases; estimated expectancy, 111 cases. These cities reported 19 deaths from smallpox for the week this year.

Typhoid fever.—One hundred and seventy-seven cases of typhoid fever were reported for the week ended April 11, 1925, by 32 States. For the corresponding week of 1924 the same States reported 213 cases. One hundred and four cities reported 53 cases of typhoid fever for the week this year and 52 cases for the corresponding week last year. The estimated expectancy for these cities was 51 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 104 cities as follows: 1925, 1,231 deaths; 1924, 1,316 deaths.

City reports for week ended April 11, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
NEW ENGLAND									
Maine:									
Portland	73,129	8	1	1	0	0	0	39	7
New Hampshire:									
Concord	22,408	0	1	0	0	0	0	0	2
Vermont:									
Barre	[1] 10,008	0	0	0	0	0	0	6	0
Burlington	23,613	9	1	1	0	0	8	38	0
Massachusetts:									
Boston	770,400	24	59	36	15	4	344	9	38
Fall River	120,912	3	3	2	5	2	0	0	3
Springfield	144,227	8	4	3	2	1	9	3	3
Worcester	191,927	8	5	4	2	1	10	0	9
Rhode Island									
Pawtucket	68,799	3	1	1	0	0	0	0	4
Providence	242,378	0	11	8	2	3	2	0	5
Connecticut:									
Bridgeport	[1] 143,555	0	7	8	1	1	0	0	3
Hartford	[1] 138,036	1	7	4	6	1	1	1	7
New Haven	172,967	9	4	0	0	0	41	0	4
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	10	13	10	--------	2	201	3	23
New York	5,927,625	188	242	271	57	19	159	44	219
Rochester	317,867	8	5	12	--------	1	42	21	7
Syracuse	184,511	1	6	5	3	1	7	4	8
New Jersey									
Camden	124,157	11	4	3	0	0	50	0	2
Newark	438,699	16	18	15	19	0	45	5	18
Trenton	127,390	0	5	1	1	0	0	0	3
Pennsylvania:									
Philadelphia	1,922,788	47	71	103	0	0	331	18	55
Pittsburgh	613,442	14	19	14	--------	8	408	19	39
Reading	110,917	8	2	0	0	0	101	4	1
Scranton	140,636	0	3	4	0	0	1	0	6
EAST NORTH CENTRAL									
Ohio.									
Cincinnati	406,312	9	9	3	--------	7	0	4	22
Cleveland	888,519	75	24	16	5	2	7	8	32
Columbus	261,082	4	4	4	--------	5	5	6	12
Toledo	268,338	9	8	2	--------	3	84	0	2
Indiana:									
Fort Wayne	93,573	6	2	0	--------	1	9	0	2
Indianapolis	342,718	15	8	2	--------	3	4	6	17
South Bend	76,709	1	1	1	0	0	0	0	1
Terre Haute	68,939	1	1	0	--------	1	6	0	3
Illinois:									
Chicago	2,886,121	55	102	48	51	14	572	24	80
Cicero	55,968	--------	2	--------	--------	--------	--------	--------	--------
Springfield	61,833	10	1	1	2	0	0	46	5
Michigan:									
Detroit	995,668	81	51	37	10	2	22	6	36
Flint	117,968	3	4	2	0	0	15	1	5
Grand Rapids	145,947	7	3	1	5	1	52	1	3

[1] Population Jan. 1, 1920.

City reports for week ended April 11, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued									
Wisconsin:									
Madison	42,519	2	1	0	0	0	4	41	0
Milwaukee	484,595	22	14	12	2	0	205	64	37
Racine	64,393	3	1	3	0	0	44	18	1
Superior	[1] 39,671	2	1	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	0	1	0	0	0	0	0	6
Minneapolis	409,125	36	14	23		4	3	0	21
St. Paul	241,891	9	14	14	0	0	8	6	15
Iowa:									
Davenport	61,262	2	1	1	0		0	1	
Sioux City	79,662	1	2	0	0		0	9	
Waterloo	39,667	12	0	0	0		0	3	
Missouri:									
Kansas City	351,819	19	7	0	8	8	3	18	29
St. Joseph	78,232	2	1	0		2	0	1	11
St. Louis	803,853	23	39	66	6	2	11	5	
North Dakota:									
Fargo	24,841	2	1	0	0	0	0	9	0
Grand Forks	14,547	0	0	0	0		0	0	
South Dakota:									
Aberdeen	15,829	0		0	0		0	0	
Sioux Falls	29,206	0	1	0	0	0	0	0	0
Nebraska:									
Lincoln	58,761	8	2	1	0	0	1	2	2
Omaha	204,382	7	4	3	0	0	1	0	18
Kansas:									
Topeka	52,555	4	1	2		1	0	97	3
Wichita	79,261	20	1	1	0	0	2	4	1
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	0	2	2	0	0	5	0	0
Maryland:									
Baltimore	773,580	88	25	12	17	4	8	66	47
Cumberland	32,361		1	0	2	1	0		1
Frederick	11,301	0	0	0		1	0	0	2
District of Columbia:									
Washington	[1] 437,571	13	10	11	0	0	37	0	15
Virginia:									
Lynchburg	30,277	7	0	1	0	0	0	37	3
Norfolk	159,089	16	1	0	0	0	8	74	5
Richmond	181,044	0	2	0	0	0	0	0	8
Roanoke	55,502	5	1	1		2	9	1	2
West Virginia:									
Charleston	45,597	3	1	0	0	0	25	1	2
Huntington	57,918	2	1	0	0		0	0	
Wheeling	[1] 56,208	4	2	0	0	0	5	2	5
North Carolina:									
Raleigh	29,171	4	1	1	0	0	0	0	1
Wilmington	35,719	2	0	1	0	0	1	1	0
Winston-Salem	56,230	8	1	0	0	0	4	10	3
South Carolina:									
Charleston	71,245	2	1	0		1	0	0	4
Columbia	39,688	5	0	0		1	0	3	1
Greenville	25,789	0	0	0	0	0	0	0	1
Georgia:									
Atlanta	222,963	8	2	5	3	1	0	2	11
Brunswick	15,937		0	0	0	0	0		0
Savannah	89,448	0	0	1	21	1	0	11	3
Florida:									
St. Petersburg	21,403	0	0	0	0	0	0	0	1
Tampa	56,050	3	1	1		1	0	4	2

[1] Population Jan. 1, 1920.

City reports for week ended April 11, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	2	0	4	0	0	0	7
Lexington	43,673	1	0	1	1	1	0	0	2
Louisville	257,671	2	5	2	5	1	1	0	14
Tennessee:									
Memphis	170,067	8	5	0		2	0	1	18
Nashville	121,128	4	1	2		4	4	3	6
Alabama:									
Birmingham	195,901	9	1	2	18	5	1	4	13
Mobile	63,858	0	1	0		1	0	0	2
Montgomery	45,383	0	0	0	0	0	0	14	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	0	1	1	0		0	4	
Little Rock	70,916	0	1	3	5	0	5	1	1
Louisiana:									
New Orleans	404,575	4	9	5	6	6	1	0	9
Shreveport	54,590	2		0	1	0	1	0	8
Oklahoma:									
Oklahoma	101,150	1	1	1	4	0	0	1	2
Tulsa	102,018		1	1	0		0		
Texas:									
Dallas	177,274	25	3	7		2	4	0	5
Galveston	46,877	0	1	0	0	0	0	0	3
Houston	154,970	2	2	2	0	0	0	0	2
San Antonio	184,727	0	2	5		1	0	0	5
MOUNTAIN									
Montana:									
Billings	16,927	2	1	0		1	0	8	1
Great Falls	27,787	1	1	2	0	0	4	1	1
Helena	[1] 12,037	0	0	0	0	0	0	0	0
Missoula	[1] 12,668	0	0	0	0	0	0	0	1
Idaho:									
Boise	22,806	0	0	0	0	0	0	0	0
Colorado:									
Denver	272,031	16	10	7		7	2	64	18
Pueblo	43,519	2	2	1		1	0	17	4
New Mexico:									
Albuquerque	16,648	1	1	0	0	0	0	2	2
Arizona:									
Phoenix	33,899	0		0		4	0	0	2
Utah:									
Salt Lake City	126,241	10	3	1	0	0	0	30	2
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	1
PACIFIC									
Washington:									
Seattle	[1] 315,685	64	4	4	0		4	67	
Spokane	104,573	8	2	3	0		25	0	
Tacoma	101,731	13	1	0		1	0	0	0
Oregon:									
Portland	273,621	11	4	14	43	2	3	17	12
California:									
Los Angeles	666,853	45	36	30	6	2	49	18	18
Sacramento	69,950	2	1	2	0	0	0	0	5
San Francisco	539,038	18	24	20	5	0	5	30	6

[1] Population Jan. 1, 1920.

City reports for week ended April 11, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	2	23	0	0	0	0	0	0	0	6	29
New Hampshire:											
Concord	1	2	0	0	0	1	0	0	0	0	16
Vermont:											
Barre	1	2	0	0	0	0	0	0	0	0	5
Burlington	1	0	0	0	0	0	0	0	0	1	1
Massachusetts:											
Boston	59	95	0	0	0	15	2	1	0	47	263
Fall River	4	1	0	0	0	1	1	0	0	1	31
Springfield	6	28	0	0	0	1	0	0	0	2	27
Worcester	8	10	0	0	0	1	0	0	0	6	58
Rhode Island:											
Pawtucket	1	4	0	1	0	1	0	0	0	0	22
Providence	9	15	0	0	0	3	0	0	0	0	58
Connecticut:											
Bridgeport	6	16	0	0	0	0	0	0	0	0	28
Hartford	5	3	0	0	0	4	0	0	0	9	42
New Haven	8	14	0	0	0	1	1	0	0	8	43
MIDDLE ATLANTIC											
New York:											
Buffalo	19	20	0	1	0	12	0	0	0	28	170
New York	218	372	1	0	0	[1] 102	9	13	1	130	1,494
Rochester	14	57	0	0	0	2	0	0	0	10	87
Syracuse	15	2	0	0	0	2	1	0	0	3	55
New Jersey:											
Camden	3	29	0	4	4	2	0	0	0	5	30
Newark	24	44	0	0	0	9	0	1	0	68	125
Trenton	3	1	0	0	0	2	1	0	0	0	40
Pennsylvania:											
Philadelphia	70	114	0	14	3	40	3	1	0	74	514
Pittsburgh	20	62	1	0	0	16	1	1	0	9	187
Reading	4	9	0	0	0	0	0	1	0	3	27
Scranton	3	3	0	0	0	3	0	0	0	4	-------
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	11	33	2	0	0	7	0	0	0	1	118
Cleveland	25	24	0	0	0	19	1	1	1	40	223
Columbus	6	15	1	6	0	4	0	0	0	11	83
Toledo	15	20	3	0	0	7	0	3	0	21	76
Indiana:											
Fort Wayne	3	7	2	2	0	0	0	0	0	2	18
Indianapolis	12	5	3	6	0	7	0	2	0	15	115
South Bend	3	17	1	0	0	1	0	0	0	2	19
Terre Haute	2	3	1	4	0	3	0	0	0	0	18
Illinois:											
Chicago	81	258	2	0	1	48	2	5	0	111	711
Cicero	1	------	0	------	------	------	0	------	------	------	------
Springfield	1	3	1	0	0	2	0	0	0	0	25
Michigan:											
Detroit	74	115	5	0	0	22	2	0	0	68	255
Flint	7	3	1	4	0	0	1	0	0	10	24
Grand Rapids	8	62	1	1	0	1	0	0	0	2	56
Wisconsin:											
Madison	3	0	1	0	0	0	0	0	0	3	7
Milwaukee	31	13	1	7	3	6	1	0	0	23	-------
Racine	4	0	1	0	0	1	0	0	0	0	8
Superior	2	3	3	0	0	0	0	0	0	0	6
WEST NORTH CENTRAL											
Minnesota:											
Duluth	5	0	2	0	0	0	0	0	0	0	27
Minneapolis	28	66	7	2	0	6	1	0	1	1	126
St. Paul	25	26	6	2	0	4	1	0	1	19	90

[1] Pulmonary tuberculosis only.

City reports for week ended April 11, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL—continued											
Iowa:											
Davenport	2	0	3	3			0	1		0	
Sioux City	2	2	1	0			0	0		0	
Waterloo	2	1	0	5			0	0		2	
Missouri:											
Kansas City	11	92	3	2	0	12	0	0	0	6	125
St. Joseph	2	7	1	0	0	0	0	0	0	0	31
St Louis	35	103	2	11	0	18	2	1	0	6	246
North Dakota											
Fargo	1	1	0	0	0	0	0	0	0	1	4
Grand Forks	1	1	1	0			0	0		0	
South Dakota:											
Aberdeen		0		0				0		0	
Sioux Falls	2	2	1	0	0	0	0	0	0	0	8
Nebraska.											
Lincoln	4	3	1	0	0	1	0	0	0	6	19
Omaha	3	1	2	25	0	5	1	0	0	0	65
Kansas											
Topeka	3	7	1	0	0	1	0	0	0	0	21
Wichita	3	3	4	0	0	1	0	0	0	10	19
SOUTH ATLANTIC											
Delaware											
Wilmington	3	0	0	0	0	3	1	1	1	0	23
Maryland.											
Baltimore	35	38	1	1	0	23	3	1	0	87	228
Cumberland	0	0	0	0	0	0	0	0	0		17
Frederick	1	0	0	0	0	0	0	0	0	0	3
District of Columbia:											
Washington	19	18	1	6	3	8	2	2	0	20	142
Virginia											
Lynchburg	0	0	0	0	0	0	0	0	0	7	10
Norfolk	1	1	1	0	0	3	0	0	0	8	
Richmond	2	0	1	0	0	5	0	0	0	0	64
Roanoke	1	0	1	0	0	2	1	0	0	0	15
West Virginia											
Charleston	1	1	0	2	0	2	1	0	0	0	17
Huntington	1	5	0	3			0	0		0	
Wheeling	2	11	0	0	0	2	0	0	0	1	25
North Carolina.											
Raleigh	0	0	0	5	0	0	0	0	0	4	12
Wilmington	1	0	0	1	0	0	1	0	0	2	5
Winston-Salem	1	0	2	3	0	2	0	0	0	6	18
South Carolina.											
Charleston	0	0	0	0	0	4	0	0	0	0	27
Columbia	0	0	0	0	0	2	0	0	0	6	30
Greenville	0	0	0	1	0	0	0	0	0	0	4
Georgia											
Atlanta	4	4	4	2	0	5	0	2	1	0	68
Brunswick	0	0	0	0	0	1	0	2	0		5
Savannah	1	0	0	0	0	2	0	0	0	0	28
Florida											
St. Petersburg	4	0	1	0	0	1	1	0	0	0	8
Tampa	0	2	0	0	0	1	1	2	0	1	28
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	2	0	0	0	0	0	1	0	0	20
Lexington	1	2	0	1	0	3	0	0	0	0	18
Louisville	4	14	1	5	0	2	1	2	0	8	91
Tennessee:											
Memphis	4	5	2	20	0	11	1	0	0	12	76
Nashville	2	10	1	9	0	5	0	0	0	0	51
Alabama:											
Birmingham	1	16	0	60	1	6	0	0	0	0	82
Mobile	0	1	1	1	0	1	0	0	0	0	24
Montgomery	0	1	0	5	0	0	0	0	0	0	17

City reports for week ended April 11, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	1	1	0			0	0		0	
Little Rock	1	1	0	0	0	2	0	0	0	0	
Louisiana:											
New Orleans	3	11	4	1	0	10	2	4	0	10	151
Shreveport		0		1	0	0		0	0	0	28
Oklahoma:											
Oklahoma	3	3	5	0	0	2	1	0	0	0	18
Tulsa	1	2	3	0			1	0			
Texas:											
Dallas	2	3	3	0	0	2	0	1	0	2	55
Galveston	1	0	1	1	0	2	0	2	0	0	15
Houston	1	3	1	7	0	6	1	0	0	0	50
San Antonio	0	0	1	1	0	11	1	1	0	0	58
MOUNTAIN											
Montana:											
Billings	1	4	1	1	0	0	0	0	0	1	4
Great Falls	1	7	1	0	0	0	0	0	0	0	4
Helena	0	0	0	0	0	1	0	0	0	0	2
Missoula	1	2	0	0	0	0	0	0	0	0	6
Idaho:											
Boise	0	0	1	0	0	0	0	0	0	0	11
Colorado:											
Denver	11	12	3	0	0	14	0	0	0	5	102
Pueblo	1	0	0	0	0	1	0	2	0	0	12
New Mexico:											
Albuquerque	0	0	0	0	0	3	0	0	0	0	10
Arizona:											
Phoenix		0		0	0	11		0	0	4	36
Utah:											
Salt Lake City	3	2	2	0	0	1	0	0	0	7	30
Nevada:											
Reno	0	0	0	1	0	0	0	0	0	0	2
PACIFIC											
Washington:											
Seattle	8	15	2	20			0	2		84	
Spokane	4	3	8	1			0	0		10	
Tacoma	2	1	1	0			0	0		0	16
Oregon:											
Portland	6	13	5	2	0	4	0	0	0	6	
California:											
Los Angeles	16	26	2	24	2	31	1	0	0	56	250
Sacramento	1	1	0	0	0	1	0	0	0	1	30
San Francisco	17	14	3	6	2	10	2	1	0	37	141

Division, State, and city	Cerebrospinal meningitis: Cases	Cerebrospinal meningitis: Deaths	Lethargic encephalitis: Cases	Lethargic encephalitis: Deaths	Pellagra: Cases	Pellagra: Deaths	Poliomyelitis (infantile paralysis): Cases, estimated expectancy	Poliomyelitis: Cases	Poliomyelitis: Deaths
NEW ENGLAND									
Massachusetts:									
Boston	2	1	0	0	0	0	0	0	0
Rhode Island:									
Providence	0	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	1	1	4	8	0	0	1	1	0
New Jersey:									
Newark	0	0	1	0	0	0	0	0	0
Trenton	0	1	0	1	0	0	0	0	0

City reports for week ended April 11, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
MIDDLE ATLANTIC—continued									
Pennsylvania:									
Philadelphia	1	1	1	1	0	0	0	0	0
Pittsburgh	0	0	0	0	0	0	0	1	0
EAST NORTH CENTRAL									
Ohio:									
Toledo	0	0	0	0	0	0	0	1	1
Illinois:									
Chicago	2	0	0	0	0	0	0	0	0
Michigan:									
Detroit	1	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	1	0	0	0	0	0	0	0	0
Missouri:									
St. Louis	0	0	0	0	0	0	0	1	0
Nebraska:									
Omaha	1	0	0	0	0	0	0	0	0
SOUTH ATLANTIC									
North Carolina:									
Winston-Salem	0	0	0	0	0	1	0	0	0
South Carolina:									
Charleston	0	0	0	0	0	1	0	0	0
Columbia	0	0	0	0	0	1	0	0	0
Georgia:									
Atlanta	0	0	0	0	0	1	0	0	0
EAST SOUTH CENTRAL									
Alabama:									
Birmingham	0	0	0	0	0	0	0	1	0
Mobile	0	0	0	0	2	2	0	0	0
Montgomery	0	0	0	0	3	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	0	0	0	0	3	3	0	0	0
Shreveport	0	0	2	1	0	3	0	0	0
Texas:									
Dallas	0	1	0	0	0	1	0	0	0
Galveston	0	0	0	0	0	0	0	2	0
MOUNTAIN									
Colorado:									
Pueblo	0	1	0	0	0	0	0	0	0
PACIFIC									
Oregon:									
Portland	3	4	0	0	0	0	0	0	0
California:									
Los Angeles	1	0	0	0	0	0	0	2	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended April 11, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths

had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, February 1 to April 11, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11
Total	[2] 175	[2] 168	149	[3] 169	162	167	167	[4] 168	[5] 178	[6] 158
New England	191	246	241	[3] 189	233	176	147	119	171	166
Middle Atlantic	171	165	163	178	167	214	196	231	241	220
East North Central	145	132	123	119	114	128	134	112	93	[6] 97
West North Central	255	259	209	209	282	201	199	247	220	226
South Atlantic	[2] 153	[2] 183	156	114	104	91	136	95	[7] 83	73
East South Central	63	69	80	51	63	40	69	57	[8] 29	34
West South Central	176	162	125	162	144	158	97	121	83	107
Mountain	191	95	162	153	86	105	143	134	124	105
Pacific	270	180	165	258	235	197	249	[4] 179	374	171

MEASLES CASE RATES

	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11
Total	[2] 254	[2] 297	383	[3] 358	418	449	506	[4] 507	[5] 561	[6] 530
New England	576	661	720	[3] 585	656	542	725	755	957	1,011
Middle Atlantic	205	287	373	343	428	518	598	633	734	680
East North Central	453	515	688	632	789	740	775	798	736	[6] 706
West North Central	17	31	27	73	68	75	93	89	77	58
South Atlantic	[2] 49	[2] 98	110	81	100	146	189	136	[7] 214	207
East South Central	51	74	51	46	86	11	69	34	[8] 21	34
West South Central	37	51	14	51	23	88	42	9	88	51
Mountain	782	153	620	916	29	763	573	38	219	57
Pacific	61	29	64	61	107	110	189	[4] 151	209	241

SCARLET FEVER CASE RATES

	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11
Total	[2] 412	[2] 400	390	[3] 408	395	432	427	[4] 419	[5] 411	[6] 366
New England	614	564	606	[3] 558	584	534	544	604	534	529
Middle Atlantic	373	407	376	412	372	439	417	405	436	359
East North Central	426	397	432	434	433	497	498	483	412	[6] 419
West North Central	871	728	742	734	775	719	792	755	736	647
South Atlantic	[2] 255	[2] 277	167	203	171	219	146	167	[7] 179	152
East South Central	97	212	223	183	194	355	286	286	[8] 288	280
West South Central	162	121	125	144	185	107	134	102	51	88
Mountain	334	382	248	315	286	200	429	248	277	258
Pacific	258	177	186	223	218	229	218	[4] 222	191	174

SMALLPOX CASE RATES

	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11
Total	[2] 76	[2] 79	66	[3] 66	62	61	63	[4] 58	[5] 56	[6] 51
New England	0	0	0	[3] 0	0	0	0	0	12	2
Middle Atlantic	2	4	2	3	1	5	8	7	21	10
East North Central	39	35	56	28	42	39	32	33	24	[6] 22
West North Central	145	193	126	120	114	124	102	135	87	97
South Atlantic	[2] 62	[2] 98	67	43	51	59	57	67	[7] 50	43
East South Central	823	675	532	583	652	446	646	423	[8] 450	572
West South Central	125	139	83	116	74	74	107	107	46	51
Mountain	20	162	86	57	48	95	67	19	19	19
Pacific	267	220	215	313	206	247	212	[4] 191	255	148

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Hartford, Conn., not included.
[4] Spokane, Wash., not included.
[5] Tampa, Fla., and Memphis, Tenn., not included.
[6] Cicero, Ill., not included.
[7] Tampa, Fla., not included.
[8] Memphis, Tenn., not included.

Summary of weekly reports from cities, February 1 to April 11, 1925—Annual rates per 100,000 population—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11
Total	[2] 13	[2] 13	11	[3] 14	11	10	12	[4] 11	[5] 8	[6] 10
New England	30	20	0	[3] 13	7	5	30	12	5	2
Middle Atlantic	13	6	10	8	10	5	8	7	4	9
East North Central	8	6	6	7	11	4	7	3	4	[6] 6
West North Central	0	10	4	17	6	10	8	6	2	2
South Atlantic	[2] 17	[2] 34	8	20	8	24	22	12	[7] 23	20
East South Central	11	40	34	34	34	34	46	57	[8] 21	17
West South Central	23	46	42	42	28	28	23	42	32	37
Mountain	29	19	38	76	10	19	0	0	0	19
Pacific	17	12	23	9	15	15	0	[4] 28	20	9

INFLUENZA DEATH RATES

	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11
Total	[2] 30	[2] 28	30	[3] 34	30	34	42	33	[5] 34	[6] 27
New England	47	27	17	[3] 40	17	35	30	30	35	32
Middle Atlantic	24	22	21	20	15	24	29	22	21	16
East North Central	13	17	18	24	27	33	49	40	38	[6] 27
West North Central	20	11	22	37	35	33	42	46	39	37
South Atlantic	[2] 49	[2] 55	55	49	53	33	53	12	[7] 29	26
East South Central	69	63	74	126	103	91	120	86	[8] 77	74
West South Central	97	122	153	148	143	107	76	36	36	46
Mountain	57	57	57	19	19	48	48	38	181	86
Pacific	41	4	12	29	29	16	12	53	29	12

PNEUMONIA DEATH RATES

	Feb. 7	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11
Total	[2] 225	[2] 222	216	[3] 201	205	222	217	206	[5] 205	[6] 202
New England	211	239	241	[3] 242	226	229	211	219	251	211
Middle Atlantic	253	231	216	185	210	214	217	199	215	190
East North Central	164	168	184	171	195	241	222	214	182	[6] 191
West North Central	134	131	131	166	140	175	173	166	193	228
South Atlantic	[2] 315	[2] 270	252	305	268	246	290	252	[7] 233	238
East South Central	326	320	320	292	269	366	286	269	[8] 253	343
West South Central	352	464	408	260	229	178	178	168	168	168
Mountain	191	277	219	267	162	210	172	200	162	267
Pacific	196	192	213	163	139	155	131	159	159	119

[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Hartford, Conn., not included.
[4] Spokane, Wash., not included.
[5] Tampa, Fla., and Memphis, Tenn., not included.
[6] Cicero, Ill., not included.
[7] Tampa, Fla., not included.
[8] Memphis, Tenn., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

THE FAR EAST

Wireless health news messages.—The following messages were sent by wireless from the Far Eastern Bureau of the Health Section of the League of Nations to headquarters at Geneva, Switzerland:

"Week ended March 28—Batavia, nil. Hongkong, smallpox 5, 2 deaths. Manila, nil. Samarang, plague 2 and 2 deaths. Singapore, plague 3 and 3 deaths. Soerabaya, nil."

"During the week ended April 4, there has been no case of plague, cholera, smallpox, or other important epidemic in Batavia, Soerabaya, Belawan Deli, Macassar, Samarang, or Penang. Two plague-infected rats were found during the week in Soerabaya. Four cases of smallpox with two deaths are reported in Hongkong and 3 cases with no deaths in Manila. One case of plague and 1 fatal case of smallpox are reported in Singapore, where one plague-infected rat was found during the week."

CANARY ISLANDS

Plague—Las Palmas.—Under date of March 26, 1925, a fatal case of plague was reported at Las Palmas, Canary Islands.

DUTCH GUIANA

Smallpox—Paramaribo.—A case of smallpox was reported at Paramaribo, Dutch Guiana, April 20, 1925.

ECUADOR

Mortality—Communicable diseases—Quito—February, 1925.—During the month of February, 1925, 137 deaths from all causes were reported at Quito, Ecuador, including diphtheria, 1 death; dysentery, 5 deaths; measles, 3; typhoid fever, 5; tuberculosis, 4. Four deaths from organic diseases of the heart were reported. Population, 100,651.

ESTHONIA

Typhoid fever and paratyphoid—February, 1925.—During the month of February, 1925, 110 cases of typhoid fever, with seven cases of paratyphoid fever, were reported in the Republic of Esthonia. Population, 1,107,059.

FINLAND

Communicable diseases—March 1–15, 1925.—During the period March 1 to 15, 1925, communicable diseases were reported in Finland as follows: Diphtheria, 51; dysentery, 5; lethargic encephalitis, 2; scarlet fever, 113; typhoid fever, 22; paratyphoid fever, 13.

INDO-CHINA

Cholera, plague, smallpox—December, 1924.—During the month of December, 1924, cholera, plague, and smallpox were reported in Indo-China as follows: Cholera—cases, 5; deaths, 2; month of December, 1923—cases, 15; deaths, 9. Plague—11 cases, 11 deaths; December, 1923, cases, 15; deaths, 5. Smallpox—cases, 485; deaths, 114; December, 1923, 3 cases with 1 death, European; 344 cases, 102 deaths, native. For distribution of occurrence according to locality, see pages 917 and 918.

Influenza.—During the period under report, 38 cases of influenza with two deaths were reported in Indo-China.

JAVA

Lethargic encephalitis—Malaria—Soerabaya.—Under date of February 26, 1925, a case of lethargic encephalitis was reported at Soerabaya, occuring in a member of the foreign resident population. Epidemic malaria was reported in two native sections of Soerabaya district, 3,000 cases having been reported in a population of 7,000.

LATVIA

Communicable diseases—January, 1925.—Communicable diseases were reported in the Republic of Latvia, during the month of January, 1925, as follows:

Disease	Cases	Disease	Cases
Chicken pox	1	Mumps	95
Diphtheria	85	Scarlet fever	313
Dysentery	5	Smallpox	5
Influenza	7	Typhoid fever	98
Leprosy	1	Typhus fever	33
Measles	252	Whooping cough	68

MALTA

Communicable diseases—March 1-15, 1925.—During the period March 1 to 15, 1925, communicable diseases were notified in the Island of Malta as follows: Chicken pox, 5 cases; influenza, 168 (including 1 case of pneumonia and 9 cases of broncho-pneumonia); 4 cases of lethargic encephalitis; 13 cases of Malta (undulant) fever; 1 case of poliomyelitis (infantile paralysis); and 1 case of typhoid fever.

VIRGIN ISLANDS

Communicable diseases—March, 1925.—During the month of March, 1925, communicable diseases were reported in the Virgin Islands of the United States as follows:

Island and disease	Cases	Remarks
St. Thomas and St. John:		
Chancroid	1	Imported.
Chicken pox	1	Do
Dengue	1	
Gonorrhea	5	Imported, 1; St. John, 1.
Malaria	6	Imported, 1; malignant tertian, 1; benign tertian, 5
Pellagra	1	
Syphilis	8	Imported, 2, primary, 1; secondary, 6.
Trachoma	2	
Tuberculosis	6	Chronic pulmonary
St Croix		
Chicken pox	4	
Gonorrhea	5	
Filariasis	4	Bancrofti.
Leprosy	4	
Malaria	1	Estivo-autumnal.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended May 1, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				Dec 28, 1924-Jan. 24, 1925: Cases, 24; deaths, 17.
India				Feb. 15-21, 1925: Cases, 1,776; deaths, 991.
Indo-China				Dec 1-31, 1924 Cases, 5; deaths, 2. Corresponding period 1923: Cases, 15; deaths, 9.
Cambodia	Dec. 1-31	1		
Cochin-China	do	3	1	
Tonkin	do	1	1	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Brazil:				
Bahia	Mar. 8-14	1	1	
Canary Islands:				
Las Palmas	Mar. 26	1	1	
Gold Coast	December, 1924	4	4	
India				Feb. 15-21, 1925: Cases, 4,403; deaths, 3,579.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended May 1, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China				Dec. 1-31, 1924: Cases, 11; deaths, 11. Corresponding month, 1923: Cases, 15; deaths, 5.
Province—				
Anam	Dec. 1-31	5	5	
Cambodia	do	6	6	
Iraq				Dec. 13, 1924-Jan. 3, 1925: Cases, 2; deaths, 1.
Java:				
Samarang	Mar. 22-28	2	2	
Soorabaya	Feb. 12-18	1	1	Mar. 29-Apr. 4, 1925: Two plague rats found.
Straits Settlements:				
Singapore	Mar. 1-7	2		Mar. 28-Apr. 4, 1925: Cases, 4; deaths, 1. One plague rat.
Union of South Africa				Mar. 1-7, 1925: Cases, 2; deaths, 1.
Orange Free State—				
Boshof District	Mar. 1-7	1		White.
Kroonstad District	do	1	1	Native.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Arabia:				
Aden	Mar. 8-14	1		Imported.
Belgium	Jan. 1-Feb. 10	4		
British East Africa:				
Mombasa	Jan. 25-Feb. 28	65	14	
Tanganyika Territory	Feb. 15-21	1		
British South Africa:				
Southern Rhodesia	Mar. 5-11	1	1	Case European; death, native.
Canada:				
British Columbia—				
Vancouver	Mar. 30-Apr. 5	14		
Victoria	Apr. 8-14	1		
Manitoba—				
Winnipeg	Apr. 5-11	1		
Ontario—				
Ottawa	Mar. 29-Apr. 4	1		
China:				
Hongkong	Mar. 22-Apr. 4	9	4	
Dutch Guiana:				
Paramaribo	Apr. 20	1		
France	Jan., 1925	10		
Gold Coast	Oct.-Dec., 1924	24		
India				Feb. 15-21, 1925: Cases, 4,045; deaths, 909.
Karachi	Mar. 15-21	6	1	
Madras	do	97	40	
Indo-China				Dec. 1-31, 1924. Cases, 485; deaths 114. Corresponding period, 1923: Cases, 344; deaths, 102, native; (European cases, 3; deaths, 1.)
Anam	Dec. 1-31	167	26	
Cambodia	do	30	13	
Cochin-China	do	50	13	
Saigon	Feb. 1-7	5	1	Including 100 square kilometers of surrounding country.
Tonkin	Dec. 1-31	238	62	
Iraq	Dec. 14-Jan 10	1	1	
Do	Jan. 11-20	4	2	
Mexico.				
Mexico City	Mar. 22-28	4		Including municipalities in Federal District.
Saltillo	Apr. 5-11		1	
San Luis Potosi	do		1	
Vera Cruz	Mar. 30-Apr. 5		1	
Yucatan State	Apr. 5-11			In country towns.
Philippine Islands:				
Manila	Mar. 29-Apr. 4	3		
Russia	Jan.-June, 1924	18,229		
Do	July-Nov., 1925	3,665		
Senegal:				
Dakar	Mar. 16-22	4		
Spain:				
Barcelona	Mar. 19-25		1	
Cadiz	Feb. 1-28		1	
Malaga	Mar. 22-Apr. 4		7	
Valencia	Mar. 22-28	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended May 1, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Straits Settlements:				
Singapore	Mar. 28-Apr 4	1	1	
Tripoli	Dec. 13-Jan. 2	1		
Tunis:				
Tunis	Mar. 26-Apr. 8	27	43	
Union of South Africa:				
Natal	Mar. 1-7			Outbreaks.
Uruguay	November, 1924	8	1	

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Czechoslovakia	January, 1925	14		
Egypt:				
Alexandria	Mar. 12-18	1		
Mexico:				
Mexico City	Mar 22-28	9		
Rumania	September-December	199	26	
Russia	January-June, 1924	95,682		
Do	July-November, 1924.	34,729		
Tunis:				
Tunis	Apr. 2-8	3		
Union of South Africa:				
Cape Province	Mar. 1-7			Outbreaks.
Natal	do			Do.

Reports Received from December 27, 1924, to April 24, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Dec. 27, 1924: Cases, 14; deaths, 13.
Colombo	Nov. 16-22	1		
Do	Jan. 11-24	2	2	
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 27,164; deaths, 16,228. Jan. 4-Feb. 14, 1925: Cases, 14,118; deaths, 8,390.
Bombay	Nov. 23-Dec. 20	4	4	
Do	Jan. 18-24	1	1	
Calcutta	Oct. 26-Jan. 3	59	51	
Do	Jan. 4-Mar. 7	162	134	
Madras	Nov. 16-Jan. 3	69	40	
Do	Jan. 4-Mar. 7	137	98	
Rangoon	Nov. 9-Dec. 20	9	2	
Do	Jan. 4-Feb. 28	11	8	
Indo-China				Aug. 1-Sept 30, 1924: Cases, 14; deaths, 10.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept. 30	6	5	
Cochin-China	do	7	4	
Saigon	Nov. 30-Dec. 6	1		
Siam:				
Bangkok	Nov. 9-29	4	2	
Do	Jan. 18-Feb. 21	6	3	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 2-Jan. 3	30	13	
Do	Jan. 18-24	3	1	
Brazil:				
Bahia	Jan. 4-Feb. 28	4	3	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 24, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
British East Africa:				
Tanganyika Territory	Nov. 23-Dec. 27	17	10	
Do	Jan. 18-24	17	11	
Uganda	Aug.-Dec., 1924	279	243	
Canary Islands:				
Las Palmas	Jan. 21-23	2		Stated to be endemic.
Do	Feb. 4	1		Stated to have been infected with plague Sept. 30, 1924.
Realejo Alto	Dec. 19	3	1	Vicinity of Santa Cruz de Teneriffe.
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-Jan. 3	12	9	
Do	Jan. 4-Mar. 7	9	12	5 plague rodents.
China:				
Foochow	Dec. 28-Jan. 3			Present.
Nanking	Nov. 23-Mar. 7			Do.
Shing Hsien	October, 1924		790	
Ecuador:				
Chimborazo Province—				
Alausi District	Jan. 14		14	At 2 localities on Guayaquil & Quito Railway.
Guayaquil	Nov. 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92.
Do	Jan. 1-Mar. 15	59	25	Rats taken, 45,027; rats found infected, 234.
Naranjito	Feb. 16-Mar. 15	1		
Yaguachi	Feb. 1-Mar. 15	2	1	
Egypt				Year 1924: Cases, 373. Jan. 1-28, 1925: Cases, 15.
City—				
Alexandria	Year 1924	2	2	Last case, Nov. 26.
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec. 7.
Suez	do	20	13	Last case, Dec. 20.
Province—				
Dakhalia	Jan. 1-8	1	1	
Kalioubiah	do	3		
Menoufieh	do	7	3	
Gold Coast				September-November, 1924: Deaths, 48.
Hawaii:				
Honokaa	Nov. 4	1		Plague-infected rodents found, Dec. 9, 1924, and Jan. 15, 1925.
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 28,154; deaths, 21,505. Jan. 4-Feb. 14, 1925: Cases, 24,477; deaths, 20,443.
Bombay	Nov. 22-Jan. 3	4	3	
Do	Jan. 4-17	2	2	
Do	Feb. 8-28	6	6	
Calcutta	Jan. 18-24	1	1	
Karachi	Nov. 30-Dec. 6	2	1	
Do	Jan. 4-Feb. 21	12	11	
Madras Presidency	Nov. 23-Jan. 3	685	487	
Do	Jan. 4-24	658	511	
Rangoon	Oct. 26-Jan. 3	26	25	
Do	Jan. 4-Feb. 28	79	69	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 25; deaths, 20.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Cambodia	do	18	15	
Cochin-China	do	3	1	
Saigon	Dec. 25-31	1	1	Including 100 square kilometers of surrounding territory.
Do	Jan. 11-17	2	1	Do.
Iraq	June 29-Dec. 13	18	13	
Japan	Aug. 10-Dec. 6	19		
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri; epidemic.
Pare	Nov. 29			Do.
Sidoardja	Jan. 2			Declared epidemic, Province of Soerabaya.
Soerabaya	Nov. 16-Dec. 31	71	72	
Do	Jan. 15-Feb. 7	4	3	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 24, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Java—Continued.				
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov. 18-Dec. 22		80	
Do	Jan. 1-14		44	Cheribon Province.
Do	Jan 30			Present.
Pasoeroean	Dec. 27			Province. Epidemic in one locality.
Pekalongan	Oct. 14-Nov. 3		29	
Do	Nov. 18-Dec. 31		177	Pekalongan Province.
Do	Jan. 1-14		81	
Probalingga	Dec 27			Province. Epidemic.
Tegal	Oct. 14-Dec. 31		26	
Do	Jan. 1-14		37	Pekalongan Province.
Madagascar:				
Fort Dauphin (port)	Nov. 1-Dec. 15	12	5	
Do	Feb. 1-15	1	1	Bubonic
Itasy Province				Nov. 1-Dec. 15, 1924: Cases, 4; deaths, 2.
Do	Feb. 1-15	1	1	Bubonic.
Majunga (port)	Nov. 1-30	1	1	
Moramanga Province				Nov. 1-Dec. 15, 1924: Cases, 49; deaths, 34. Jan. 16-Feb. 15, 1925 Cases, 5; deaths, 5.
Tamatave (port)	Nov. 1-30	1	1	
Tananarive Province				Oct. 16-Dec. 31, 1924: Cases, 298; deaths, 274.
Do				Jan 1-Feb. 15: Cases, 227; deaths, 194.
Tananarive (town)	Oct. 16-Nov. 30	8	7	Bubonic, pneumonic, septicemic.
Do	Dec 16-31	4	4	
Do	Jan 1-Feb. 15	3	3	Septicemic.
Mauritius Island				Year 1924. Cases, 161; deaths, 144.
District—				
Flacq	Dec. 1-31	5	4	
Pamplemousses	do	1	1	
Plaines Wilhems	January-December, 1924.	54	47	Not present March, April, May.
Port Louis	February-December, 1924.	101	92	
Mexico:				
Tampico	Apr 6, 1925.			Plague rat found in vicinity of Government wharves.
Morocco:				
Marrakech				Feb. 9, 1925: Present in native quarter of town. Stated to be pneumonic in form and of high, mortality.
Nigeria				August-November, 1924: Cases, 387; deaths, 317.
Palestine:				
Jerusalem	Mar. 3-9	1		
Peru:				
Callao	February, 1925	6	6	
Siam:				
Bangkok	Dec 28-Jan. 3	1	1	
Do	Jan 25-Feb. 14	2	1	
Siberia:				
Transbaikalia—				
Turga	October, 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Do	Jan. 4-Feb. 28	13	10	
Syria:				
Beirut	Jan. 11-20	1		
Turkey:				
Constantinople	Jan. 9-15	5	5	
Union of South Africa	Nov 22-Jan. 3	28	15	In Cape Province, Orange Free State, and Transvaal.
Do	Jan. 4-Feb. 28	43	17	Do
On vessel:				
S. S. Conde				At Marseille, France, Nov. 8, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 24, 1925—Continued

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 31, 1924: Cases, 409. Jan. 1-20, 1925: Cases, 1[illegible]
Algiers	Jan. 1-Feb. 28	6		
Arabia:				
Aden	Jan. 25-Mar. 21	11	1	
Bolivia:				
La Paz	Nov. 1-Dec 31	20	11	
Do	Jan. 1-Feb. 28	5	7	
Brazil:				
Pernambuco	Nov. 9-Jan. 3	100	27	
Do	Jan. 4-Feb. 28	95	42	
British East Africa:				
Kenya—				
Mombasa	Jan. 18-24	1		
Unganda—				
Entebbe	Oct. 1-31	4		
British South Africa:				
Northern Rhodesia	Oct. 28-Dec. 15	57	2	
Do	Jan. 27-Feb. 2	3		Natives.
Southern Rhodesia	Jan 29-Feb. 4	1		
Bulgaria:				
Sofia	Mar. 12-18	1		Varioloid.
Canada:				
Alberta—				
Calgary	Mar. 15-21	1		
British Columbia—				
Ocean Falls	Mar. 7-27	6		Very mild.
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-Mar. 30	288		
Victoria	Jan. 18-Apr. 4	6		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-Feb. 27	30		
New Brunswick—				
Bonaventure and Gaspe Counties.	Jan. 1-31	1		
Northumberland	Feb. 8-14	1		County.
Ontario				Nov. 30-Dec 27, 1924: Cases, 33. Dec. 28, 1924, to Mar 28, 1925: Cases, 57; deaths, 1.
Hamilton	Jan. 24-30	1		
Ceylon				July 27-Nov. 29, 1924: Cases, 27; deaths, 1.
Colombo	Jan. 18-Feb. 7	4		
China:				
Amoy	Nov. 9-Feb. 14			Present. Feb. 22-Mar. 7, 1925: Deaths, 4.
Antung	Nov. 17-Dec 28	5		
Do	Jan. 5-Feb. 14	15	1	
Do	Mar. 2-8	3		
Foochow	Nov. 2-Feb. 28			Present.
Hongkong	Nov. 9-Jan. 3	6	2	
Do	Jan. 4-Feb. 7	9	7	
Do	Feb. 15-Mar. 7	5	5	
Manchuria—				
Dairen	Jan. 19-Feb. 1	2		
Harbin	Jan. 15-Feb. 11	5		
Nanking	Jan. 4-Mar. 7			Do.
Shanghai	Dec. 7-27	1	2	
Do	Jan. 18-Mar. 7		8	
Chosen:				
Seoul	Dec. 1-31	1		
Colombia:				
Buenaventura	Feb. 15-28	2		
Santa Marta	Mar. 15-28			Present in mild form in localities in vicinity.
Czechoslovakia				April-June, 1924: Cases, 1; occurring in Province of Moravia.
Dominican Republic:				
Puerta Plata	Mar. 8-21	3		
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 31	10		
Do	Jan. 8-28	8		
Do	Feb. 26-Mar. 4	1		
Esthonia				Dec. 1-31, 1924: Cases, 2.
France				July-December, 1924: Cases, 81.
Dunkirk	Mar. 2-8	1		From vessel. In quarantine.
St. Malo	Feb. 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 24, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Germany				June 29-Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1-10	1		
Gibraltar	Dec. 8-14	1		
Gold Coast				July-September, 1924: Cases, 82; deaths, 1.
Great Britain:				
England and Wales	Nov 23-Jan. 3	472		
Do	Jan. 4-Mar. 21	1,477		
Newcastle-on-Tyne	Jan 18-Feb. 21	9		
Do	Mar. 1-7	1		
Greece				January-June, 1924: Cases, 170; deaths, 27.
Do				July-December, 1924: Cases, 38; deaths, 26
Saloniki	Nov. 11-Dec. 22	3		
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 12,564; deaths, 2,857. Jan. 4-Feb. 14, 1925: Cases, 18,789; deaths, 4,110.
Bombay	Nov. 2-Jan 3	30	18	
Do	Jan. 4-Feb 28	265	135	
Calcutta	Oct. 26-Jan. 8	307	170	
Do	Jan. 4-Mar. 7	1,627	1,101	
Karachi	Nov 16-Jan. 3	16	2	
Do	Jan. 4-Feb 14	52	6	
Do	Feb 22-Mar. 14	40	11	
Madras	Nov. 16-Jan. 3	122	48	
Do	Jan. 4-Mar. 7	552	212	
Rangoon	Oct. 26-Jan. 3	86	28	
Do	Jan. 4-Feb 28	504	98	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 223; deaths, 76.
Province—				
Anam	Aug. 1-Sept. 30	49	11	
Cambodia	do	40	9	
Cochin-China	do	115	49	
Saigon	Nov. 16-Jan 3	17	5	Including 100 sq. km. of surrounding country.
Do	Jan 4-10	3	1	Do.
Do	Jan. 25-31	5	2	Do.
Do	Feb 8-21	19	4	
Tonkin	Aug. 1-Sept 30	19	7	
Iraq	June 29-Dec. 13	137	66	
Bagdad	Nov. 9-Dec. 27	2	1	
Do	Mar. 1-7	1		
Italy				June 29-Dec. 27, 1924: Cases, 63;
Jamaica				Nov. 30, 1924-Jan. 3, 1925: Cases, 50. Reported as alastrim.
Do				Jan. 4-31, 1925: Cases, 43. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim.
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Nagasaki	Feb. 9-Mar. 22	7	2	
Taiwan	Jan. 1-31	1		
Java.				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in 2 native villages.
Soerabaya	Oct. 19-Dec. 31	685	212	
Do	Jan. 15-Feb 7	258	31	
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov. 14	2		
Do	Dec. 20-Jan. 2	19	4	
Buitenzorg	Dec. 25-31	1		Batavia Residency.
Cheribon	Oct. 14-Nov. 24	15		
Do	Jan. 1-28	3		
Krawang	Jan. 15-21	1		
Pekalongan	Oct. 14-Nov. 24	22		
Do	Dec. 25-31	3		Province.
Pemalang	Jan. 8-14	1		Pekalongan Residency.
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5. Jan. 1-31, 1925: Cases, 5.
Lithuania				Jan. 1-31, 1925: Cases, 2.
Mexico:				
Durango	Dec. 1-31		5	
Do	Jan. 1-Mar. 31		16	
Guadalajara	Dec. 23-29		1	
Do	Jan. 6-Mar. 23		4	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 24, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico—Continued.				
Mexico City	Nov. 23-Dec. 27	5		
Do	Jan. 11-Mar. 21	31		
Monterey				Jan. 24, 1925: Outbreak. Mar. 14, 1925, present.
Salina Cruz	Dec. 1-31	1	1	
Do	Feb. 22-28	2		
Saltillo	do		1	
San Luis Potosi	Mar. 29-Apr. 4		1	
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-Mar. 31	59	18	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan. 5-Mar. 29		37	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Nigeria				January-June, 1924: Cases, 357; deaths, 87.
Do				July-November, 1924: Cases, 87; deaths, 25.
Persia:				
Teheran				Sept. 23-Dec. 31, 1924: Deaths, 12.
Do	Jan. 1-31		10	
Peru:				
Arequipa	Nov 24-30		1	
Do	Jan. 1-31		3	
Poland				Sept. 21-Dec. 28, 1924: Cases, 30; deaths, 2.
Portugal.				
Lisbon	Dec. 7-Jan. 3	17		
Do	Jan. 4-Mar. 14	78	7	
Oporto	Nov. 30-Dec. 27	3	2	
Do	Jan. 11-Mar. 14	3		
Russia				January-June, 1924: Cases, 9,683. July-September, 1924: Cases, 1,251.
Siam:				
Bangkok	Dec 28-Jan. 3	1	1	
Do	Jan. 18-Feb. 21		19	
Sierra Leone:				
Freetown	Feb 7-14	2		From S. S. Elmina.
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Cadiz	Nov. 1-Dec. 31		51	
Do	Jan. 1-31		9	
Madrid	Year 1924		40	
Do	Jan.-Feb		13	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-Mar. 21		83	
Valencia	Nov. 30-Dec. 6	2		
Do	Feb. 15-Mar. 21	4		
Straits Settlements:				
Singapore	Feb. 22-28	2		
Switzerland:				
Lucerne	Nov. 1-Dec. 31	19		
Do	Jan. 1-31	24		
Syria:				
Aleppo	Nov. 23-Dec. 27	13		
Do	Jan. 4-Feb. 28	71	18	
Beirut	Feb. 11-20	1		
Damascus	Jan. 6-13	2		
Do	Feb. 11-20	22		
Tripoli				
Tripoli	July 14-Dec. 12	52		
Tunis.				
Tunis	Nov. 25-Dec. 29	42	35	
Do	Jan. 1-Mar. 25		248	
Turkey.				
Constantinople	Dec. 13-19	5		
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 14.
Cape Province	Feb. 1-7			Outbreaks. Jan. 1-31, 1925: Cases, 4. Natives.
De Aar District	Jan. 25-31			Outbreak at railway camp.
Do	Nov. 9-Jan. 17			Outbreaks.
Orange Free State	Nov. 2-8			Do.
Ladybrand District	Jan. 15-31			Outbreak, on farm.
Transvaal	Nov. 9-Jan. 10			Do.
Do	Feb. 1-7			Outbreaks.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 24, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Uruguay				January-June, 1924: Cases, 101; deaths, 2.
[illegible]				July-October, 1924: Cases, 45; deaths, 4.
On v[illegible]l:				
S. S. Eldridge	Mar. 23	1		At Port Townsend, from Yokohama and ports.
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St. Malo, France, January, 1924, from Sfax, Tunis; believed to have imported smallpox infection.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 101; deaths, 14.
Algiers	Nov. 1-Dec. 31	5	1	
Do	Jan. 1-Mar. 10	10	4	
Argentina:				
Rosario	Jan. 1-31		1	
Bolivia:				
La Paz	Nov. 1-Dec. 31	3		
Do	Jan. 1-31	2		
Bulgaria				January-June, 1924: Cases, 191; deaths, 28.
Do				July-October, 1924: Cases, 5.
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Do	Jan. 6-12		2	
Do	Jan. 27-Feb. 2		1	
Iquique	Nov. 25-Dec. 1		2	
Do	Feb. 1-7		1	
Talcahuano	Nov. 16-Dec. 20		5	
Do	Jan 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-Mar. 7		11	
Chosen:				
Chemulpo	Feb. 1-28	1		
Seoul	Nov. 1-30	1	1	
Do	Feb. 1-28	2	1	
Czechoslovakia				December, 1924: Cases, 5.
Egypt:				
Alexandria	Dec 3-9	1	1	
Cairo	Oct. 1-Dec. 23	13	8	
Esthonia				Dec. 1-31, 1924: Cases, 5.
Do	Jan. 1-31	4		
France				July-October, 1924: Cases, 7.
Gold Coast				Oct 1-31, 1924: 1 case
Greece				May-June, 1924: Cases, 116; deaths, 8.
Do				July-December, 1924: Cases, 40; deaths, 4.
Saloniki	Nov. 17-Dec. 15	3	2	
Do	Jan. 25-31	1		
Japan				Aug. 1-Nov. 15, 1924: Cases, 2.
Latvia				October-December, 1924: Cases, 30.
Lithuania				August-October, 1924: Cases, 15, deaths, 1.
Do				Jan. 1-31, 1925: Cases, 27; deaths, 2.
Mexico:				
Durango	Dec. 1-31		1	
Do	Mar. 15-31	1	1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District.
Do	Jan. 11-Mar. 21	24		
San Luis Potosi	Mar. 8-14		1	
Morocco				November, 1924; Cases, 5.
Palestine				Nov. 12-Dec. 8, 1924: Cases, 7.
Ekron	Dec. 23-29	1		
Jerusalem	do	2		
Do	Jan. 20-26	1		
Mikveh Isreal	do	1		
Ramleh	Feb. 10-16	1		
Tiberias	Feb. 24-Mar. 2	2		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to April 24, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Peru:				
Arequipa	Nov. 24-Dec. 31		3	
Poland				Sept. 28, 1924-Jan. 3, 19[illegible], 751; deaths, 57.
Portugal:				
Lisbon	Dec. 29-Jan. 4		2	
Oporto	Jan. 4-Feb. 7	2		
Rumania				January-June, 1924: Cases, 2,906; deaths, 328.
Do				July-August, 1924: Cases, 89; deaths, 12.
Constanza	Dec. 1-20	1		
Do	Feb. 1-28	2		
Russia				Jan. 1-June 30, 1924: Cases, 92,000. July-September, 1924: Cases, 5,225.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Sweden:				
Goteborg	Jan. 18-Feb. 28	2		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Tunis	Mar. 5-25	9	1	
Turkey:				
Constantinople	Nov. 15-Dec. 19	6	1	
Do	Jan. 2-Mar. 7	9	1	
Union of South Africa				Nov 1-Dec 31, 1924: Cases, 345; deaths, 87. Jan. 1-31, 1925: Cases, 94; deaths, 12; native. In white population, cases, 2.
Cape Province	Nov. 1-Dec. 31	126	24	Jan 1-31, 1925 Native, cases, 41; deaths, 6.
Do	Feb. 1-28			Outbreaks.
East London	Nov. 16-22	1		
Do	Jan. 18-24	1		
Port Elizabeth	Feb. 22-28	1		
Natal	Nov. 1-Dec. 31	130	50	
Do				Jan. 1-31, 1925: Cases, 28; deaths, 4. Native.
Durban	Feb. 15-21	1		
Orange Free State	Nov. 1-Dec. 31	59	8	Jan. 11-31, 1925. Cases, 16, deaths, 2. Native.
Do	Feb. 15-21			Outbreaks.
Transvaal	Nov. 1-Dec. 31	30	5	
Do				Jan. 1-31, 1925: Cases, 9. Native.
Yugoslavia				Aug. 3-Oct. 18, 1924: Cases, 17; deaths, 2. Mar. 8-14, 1925: Cases, 1.
Belgrade	Nov. 24-Dec. 28	5		

YELLOW FEVER

Gold Coast	October-November, 1924.	4	4	
Salvador:				
San Salvador	June-October, 1924	77	28	Last case, Oct. 22, 1924.

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TREASURY DEPARTMENT

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1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of diesase. (3) Other pertinent information regarding sanitation and the conservation of the public health.

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PUBLIC HEALTH REPORTS

VOL. 40 MAY 8, 1925 No. 19

YEAST IN THE TREATMENT OF PELLAGRA AND BLACK TONGUE

A Note on Dosage and Mode of Administration

By JOSEPH GOLDBERGER, G. A. WHEELER, W F TANNER, Surgeons, United States Public Health Service

In a recent communication [1] there were reported the results of a study of the action of dried brewers' yeast as a therapeutic and preventive agent in pellagra. Evidence was submitted that was interpreted as indicating conclusively that this yeast supplied an essential or the essential preventive factor or factors. Although both therapeutic and preventive tests were made, emphasis was placed on the preventive action, since the preventive test was considered much more significant of the value of the preparation.

As was stated in that communication, 26 patients in all were taken under treatment between May 26, 1923, and May 10, 1924. A number of additional cases have been treated since that time. The majority have been mild recurrent attacks. With one exception, all made prompt recoveries from the immediate attack. The exception was a case in a recently admitted patient with symptoms of central neuritis who died within 72 hours after coming under observation and beginning treatment.

Since the publication of the above-mentioned report, inquiries have been received relative to certain details of the treatment with yeast which, so far as possible, we shall attempt to answer at this time.

Our work with yeast has been done almost altogether with a commercial preparation of *dried* brewers' yeast. [2] It is not improbable that pure *dried* bakers' yeast [3] will prove to be approximately equally efficient.

At the outset of the study the therapeutic dose was arbitrarily fixed at 1 gram per kilo of body weight for patients with marked active symptoms. As our experience has grown, we have come increasingly to believe that a considerably smaller dose will suffice, particularly when combined (and so far as possible it should be) with the now well-known dietary treatment. In the cases more recently treated the daily dose has been between 15 and 30 grams

[1] Goldberger and Tanner: Pub. Health Rep, 1925, **40**, 54-80.

[2] The Harris Laboratories, Tuckahoe, N. Y

[3] Northwestern Yeast Co., Chicago, Ill.; The Fleischman Co., New York, N. Y.

(one-half to 1 ounce) or, roughly, 2 level teaspoonfuls three to six times a day.

We were led to test the action of yeast in pellagra by reason of some very favorable indications afforded by tests of this preparation in experimental black tongue in dogs.[4] We would now state that in the treatment of this experimentally induced disease a dose of 15 to 30 grams (one-half to 1 ounce), depending on the weight of the animal, has been found very efficient in cutting short an attack. However, the treatment must be begun relatively early; if delayed until after the dog's temperature has risen to 40° C. (104° F.), the outlook is much less favorable. We would recommend this treatment to veterinarians for trial in the spontaneous disease.

The dry powdered yeast (well dried) keeps well and retains much if not all of its pellagra-preventive and therapeutic activity for some weeks at least. It may be administered in a variety of ways. In pellagra we have, for the most part, given it in ordinary table sirup; less frequently in canned tomato juice, and in milk. In black tongue we have given the yeast in gelatin capsules (veterinary No. 13). It may be stirred into the food as soon as the animal begins to eat.

The beneficial effects of the yeast treatment have repeatedly been recognized by us as early as the end of the second or third day after the treatment was begun in both the human and the canine disease.

In closing this note it may be well to emphasize that in all but the severe cases of pellagra careful feeding is all that is needed. In our judgment, it is only in cases of more than average severity, or where such foods as fresh milk and fresh meat can not be procured, that yeast may serve a valuable purpose and may help to save life.

LEPROSY IN THE PHILIPPINES

When the United States occupied the Philippine Archipelago a quarter of a century ago, the military and, later, the civil authorities, were confronted by health problems of unknown acuteness and magnitude.

It soon became evident that leprosy was prevalent throughout the islands; an accurate morbidity census was not available, perhaps not obtainable. Although estimates of the number of cases of leprosy varied within the wide range of a few hundred to several thousand, the problem of checking the spread of the disease, with the ideal of ultimate eradication, was optimistically undertaken.

Culion Island, with a group of other small islands, was set aside by executive order for the establishment of a leper colony, and on May 27, 1906, the first lepers were isolated in the Culion settlement.

[4] Goldberger and Wheeler. Unpublished data.

Nineteen years have passed since segregation was begun in Culion, and in that time nearly 1,000 lepers, on the average, have been taken to Culion annually. Approximately 5,000 lepers remain alive in Culion; a few hundred have been discharged in recent years on parole. A simple arithmetical calculation reveals the mortality among known cases, but can not take into consideration the deaths of lepers hidden or undiagnosed in the remainder of the archipelago.

At first glance one is impelled to question the ultimate utility of segregation if, each year, for a generation, a thousand lepers may be found for isolation. The answer, not at first obvious, is, nevertheless, outstanding in that for the last decade a gradual change has been noted in the character of the patients isolated. Formerly the great majority of lepers segregated were of the advanced type, maimed and a burden to family and community; whereas in recent years an ever increasing number of early cases may be seen among the new arrivals—incontestable evidence that segregation is becoming effective and that a few more years of vigorous enforcement will stem the tide.

Those concerned in the original organization of the Culion Colony wisely determined upon the establishment of a settlement not too far removed in nature from the surroundings to which the majority of the patients were accustomed, and selected a promontory in the Bay of Culion, where there has since been built a typical Filipino town. Improvements have been added from time to time, so that it now has an excellent supply of mountain spring and artesian water, a sewerage system, an incinerator, electric light and ice plants, schools, churches, and a theater.

The housing of such a large number of indigents has been accomplished by providing large dormitories in which groups of children and young unmarried adults are cared for, and permitting families or groups of adults to build houses of their own design from materials furnished by the government.

Incapacited lepers suffering from acute or chronic manifestations of the disease or from intercurrent affections are cared for in modern, reinforced concrete infirmaries, nursed by fellow patients who have been trained as orderlies under the supervision of Sisters of Charity.

That the Culion Leper Colony might well serve as a model of sanitation is evident in the gradual lowering of the death rate, which has steadily diminished from nearly 500 per thousand per annum in 1908 to a point where it compares favorably with that in the average Filipino city or town.

The original function of the Culion Leper Colony was the segregation of lepers for the protection of the public health; but since, in recent years, the results of improved methods of treatment seem to warrant

the opinion that many cases of leprosy are curable, a new hope has arisen among the lepers of Culion, as elsewhere in the world, and the colony is assuming the air of a sanatorium where the patient hopes to recover and return to friends and family, rather than that of a settlement of individuals who have willingly or otherwise permanently severed all social ties.

Reports are being received from the Culion Colony describing therapeutic experiments carried out on a sufficiently large scale to warrant the drawing of important conclusions after sufficient time has elapsed. From the wealth of clinical material, more than 2,000 lepers have been selected for treatment with the ethyl esters of chaulmoogra oil alone—an experiment which, in itself, should throw considerable light on the confusion now existing from conflicting reports as to the efficacy of this modern refinement of chaulmoogra oil.

Consistent rumors are received from the press indicating the desire of certain Filipinos to discontinue the segregation of lepers in the Culion Leper Colony and to build numerous smaller hospitals throughout the islands, a project which should be discouraged from both an economic and sanitary standpoint, since it would be susceptible to abuses which would tend to defeat the object of segregation, the benefits of which are already in sight.

EXTENT OF RURAL HEALTH SERVICE IN THE UNITED STATES, 1921-1925

By L. L. Lumsden, Surgeon, United States Public Health Service

According to data obtained by the Rural Sanitation Office of the Public Health Service from the health departments of the States, the following (Table 1) is a list, by States, of counties (or districts) in which the rural sections at the beginning of the calendar years 1921, 1922, 1923, 1924, and 1925, respectively, were provided with local health service under the administration of whole-time county or (local) district health officers:

TABLE 1.—*List of counties, or districts, in which, as of January 1, 1921, 1922, 1923, 1924, and 1925, respectively, rural sections were provided with local health service under whole-time health officers*

1921	1922	1923	1924	1925
		ALABAMA		
Baldwin	Baldwin	Baldwin	Baldwin	Baldwin
Calhoun	Barbour	Barbour	Barbour	Barbour
Colbert	Calhoun	Calhoun	Calhoun	Calhoun
Etowah	Colbert	Colbert	Colbert	Colbert
Hale	Dallas	Covington	Covington	Covington
Jefferson	Etowah	Dallas	Dallas	Dallas
Lauderdale	Houston	Etowah	Escambia	Escambia
Madison	Jefferson	Houston	Etowah	Etowah
Mobile	Lauderdale	Jefferson	Franklin	Franklin
Montgomery	Madison	Lauderdale	Houston	Houston
Morgan	Mobile	Madison	Jefferson	Jefferson
Pike	Montgomery	Mobile	Lauderdale	Lauderdale
Sumter	Morgan	Montgomery	Limestone	Limestone
Talladega	Pike	Morgan	Madison	Madison
Tuscaloosa	Sumter	Pike	Mobile	Marengo
Walker	Talladega	Sumter	Montgomery	Marshall
	Tuscaloosa	Talladega	Morgan	Mobile
	Walker	Tuscaloosa	Pike	Montgomery
		Walker	Sumter	Morgan
			Talladega	Pike
			Tuscaloosa	Sumter
			Walker	Talladega
				Tuscaloosa
				Walker
		ARIZONA		
				Cochise
		CALIFORNIA		
	Los Angeles	Los Angeles	Los Angeles	Los Angeles
	San Francisco [1]	Monterey	Monterey	Monterey
		Orange	Orange	Orange
		San Francisco [1]	San Joaquin	San Diego
		San Luis Obispo	San Luis Obispo	San Joaquin
				San Luis Obispo
		CONNECTICUT		
				Fairfield [2]
		GEORGIA		
Baldwin	Baldwin	Baldwin	Baldwin	Baldwin.
Bartow	Bartow	Bartow	Bartow	Bartow
Brooks	Brooks	Clarke	Bibb	Bibb
Clarke	Clarke	Cobb	Clarke	Clarke
Cobb	Cobb	Decatur	Cobb	Cobb
Decatur	Decatur	Dougherty	Decatur	Decatur
Dougherty	Dougherty	Floyd	Dekalb	Dekalb
Floyd	Floyd	Fulton	Dougherty	Dougherty
Glynn	Glynn	Glynn	Floyd	Floyd
Hall	Hall	Hall	Glynn	Glynn
Laurens	Laurens	Laurens	Hall	Hall
Lowndes	Lowndes	Lowndes	Laurens	Laurens
Sumter	Mitchell	Mitchell	Lowndes	Lowndes
Thomas	Sumter	Richmond	Mitchell	Miller
Troup	Thomas	Sumter	Richmond	Mitchell
Walker	Troup	Thomas	Sumter	Richmond
Worth	Walker	Troup	Thomas	Seminole
	Worth	Walker	Troup	Sumter
			Walker	Thomas
				Troup
				Walker

[1] As San Francisco County is entirely urban, it should not have been included in either 1922 or 1923, and is omitted from the 1924 and 1925 lists.
[2] District.

TABLE 1.—*List of counties, or districts, in which, as of January 1, 1921, 1922, 1923, 1924, and 1925, respectively, rural sections were provided with local health service under whole-time health officers*—Continued

1921	1922	1923	1924	1925
		IDAHO		
	Bannock Twin Falls Boise			
		ILLINOIS		
		Morgan	Morgan	Cook Crawford Morgan Sangamon
		INDIANA		
		Fulton		
		IOWA		
	Dubuque	Dubuque	Dubuque Washington	Dubuque Washington
		KANSAS		
Butler Cherokee Ford Geary Marion	Butler Cherokee Ellis Ford Geary Marion Ottawa Wabaunsee	Butler Cherokee Ellis Ford Geary Marion Ottawa Wabaunsee	Butler Cherokee Ellis Geary Lyon Marion Ottawa Sheridan	Cherokee Geary Lyon Marion Ottawa Sheridan
		KENTUCKY		
Boyd Daviess Fulton Harlan Jefferson Mason Muhlenberg Scott	Bell Boyd Daviess Fulton Harlan Mason Muhlenberg Scott	Boyd Daviess Fulton Harlan Jefferson Johnson Mason Scott	Bell Boyd Daviess Fayette Fulton Jefferson Johnson Mason Scott	Boyd Daviess Fayette Fulton Jefferson Johnson Mason Scott
		LOUISIANA [1]		
Rapides	Beauregard Caddo De Soto Natchitoches Ouachita Rapides Washington	Beauregard Caddo De Soto Natchitoches Ouachita Rapides Washington	Beauregard Caddo Claiborne De Soto Natchitoches Ouachita Rapides St. Mary Tangipahoa Washington	Beauregard Caddo Claiborne De Soto Natchitoches Ouachita St. Mary Tangipahoa Washington

[1] Parishes.

TABLE 1.—*List of counties, or districts, in which, as of January 1, 1921, 1922, 1923, 1924, and 1925, respectively, rural sections were provided with local health service under whole-time health officers*—Continued

1921	1922	1923	1924	1925
		MAINE [1]		
		Oldtown Rumford Sanford Waterville York	Oldtown Rumford Sanford Waterville York	Oldtown Rumford Sanford Waterville York
		MARYLAND		
	Washington	Allegany Montgomery	Allegany Frederick Montgomery	Allegany Baltimore Calvert Carroll Frederick Montgomery
		MASSACHUSETTS		
	Cape Cod [1]	Cape Cod [1]	Cape Cod [1]	Cape Cod [1]
		MINNESOTA		
			St Louis	St. Louis
		MISSISSIPPI		
Bolivar Harrison Jones Lee	Bolivar Coahoma Forrest Harrison Jones Lee Marshall Union Washington	Bolivar Coahoma Forrest Harrison Hinds Jones Lauderdale Lee Leflore Marshall Tallahatchie Washington	Bolivar Coahoma Forrest Harrison Hinds Jones Lauderdale Lee Tallahatchie Washington	Bolivar Coahoma Forrest Hancock Harrison Jackson Jones Lee Pearl River Sharkey Washington
		MISSOURI		
Greene	Greene Jasper	Cape Girardeau Dunklin Gentry Greene Jasper Monroe New Madrid Nodaway Pettis Polk St Francois	Dunklin Gentry Greene New Madrid Nodaway Pettis Polk St Francois St. Louis	Dunklin Gentry Greene New Madrid Nodaway Pettis Polk St. Francois St. Louis
		MONTANA		
Cascade Missoula Yellowstone	Cascade Lewis and Clark Missoula Yellowstone	Cascade Lewis and Clark Missoula Yellowstone	Cascade Lewis and Clark Missoula	Cascade Lewis and Clark Missoula

[1] Districts.

TABLE 1.—*List of counties, or districts, in which, as of January 1, 1921, 1922, 1923, 1924, and 1925, respectively, rural sections were provided with local health service under whole-time health officers*—Continued

1921	1922	1923	1924	1925
		NEW MEXICO		
Bernalillo	Bernalillo	Bernalillo	Bernalillo	Bernalillo
Chaves	Chaves	Chaves	Chaves	Chaves
San Miguel	San Miguel	Dona Ana	Colfax	Colfax
Santa Fe	Santa Fe	Eddy	Dona Ana	Dona Ana
Union	Torrance	San Miguel	Eddy	Eddy
	Union	Santa Fe	McKinley	McKinley
	Valencia	Union	San Miguel	San Miguel
		Valencia	Santa Fe	Santa Fe
			Union	Union
			Valencia	Valencia
		NEW YORK		
			Cattaraugus	Cattaraugus
		NORTH CAROLINA		
Beaufort	Bertie	Bertie	Beaufort	Beaufort
Buncombe	Bladen	Bladen	Bertie	Bertie
Bertie	Buncombe	Buncombe	Bladen	Bladen
Cabarrus	Cabarrus	Cabarrus	Brunswick	Brunswick
Chatham	Columbus	Carteret	Buncombe	Buncombe
Cumberland	Craven	Columbus	Cabarrus	Cabarrus
Davidson	Cumberland	Craven	Columbus	Columbus
Durham	Davidson	Cumberland	Craven	Craven
Edgecombe	Durham	Davidson	Cumberland	Cumberland
Forsyth	Edgecombe	Durham	Davidson	Davidson
Granville	Forsyth	Edgecombe	Durham	Durham
Halifax	Granville	Forsyth	Edgecombe	Edgecombe
Lenoir	Guilford	Granville	Forsyth	Forsyth
New Hanover	Halifax	Guilford	Granville	Granville
Northampton	Lenoir	Halifax	Guilford	Guilford
Pitt	Mecklenburg	Lenoir	Halifax	Halifax
Robeson	New Hanover	Mecklenburg	Henderson	Henderson
Rowan	Northampton	New Hanover	Hyde	Hyde
Sampson	Pamlico	Northampton	Lenoir	Lenoir
Surry	Pitt	Pitt	Mecklenburg	Mecklenburg
Vance	Robeson	Robeson	New Hanover	New Hanover
Wake	Rowan	Rowan	Northampton	Northampton
Wayne	Sampson	Sampson	Pamlico	Pamlico
Wilkes	Surry	Surry	Pitt	Pitt
Wilson	Vance	Vance	Robeson	Richmond
	Wake	Wake	Rowan	Robeson
	Wayne	Wayne	Sampson	Rowan
	Wilkes	Wilkes	Surry	Rutherford
	Wilson	Wilson	Vance	Sampson
			Wake	Surry
			Wayne	Vance
			Wilkes	Wake
			Wilson	Wayne
				Wilkes
				Wilson

TABLE 1.—*List of counties, or districts, in which, as of January 1, 1921, 1922, 1923, 1924, and 1925, respectively, rural sections were provided with local health service under whole-time health officers*—Continued

1921	1922	1923	1924	1925
OHIO				
Allen	Allen	Allen	Allen	Allen
Ashtabula	Ashtabula	Ashtabula	Ashtabula	Ashtabula
Belmont	Belmont	Auglaize	Athens	Athens
Butler	Butler	Belmont	Auglaize	Belmont
Champaign	Champaign	Butler	Belmont	Butler
Clermont	Clermont	Champaign	Butler	Clermont
Crawford	Clinton	Clermont	Clermont	Clinton
Cuyahoga	Columbiana	Clinton	Clinton	Columbiana
Delaware	Coshocton	Columbiana	Columbiana	Coshocton
Fairfield	Crawford	Coshocton	Coshocton	Crawford
Hamilton	Cuyahoga	Crawford	Crawford	Cuyahoga
Henry	Erie	Cuyahoga	Cuyahoga	Delaware
Highland	Greene	Erie	Erie	Erie
Hocking	Hamilton	Hamilton	Geauga	Fayette
Lake	Highland	Hocking	Hamilton	Franklin
Lorain	Hocking	Huron	Hancock	Geauga
Lucas	Lake	Lake	Hocking	Hamilton
Mahoning	Lorain	Lorain	Huron	Hancock
Marion	Lucas	Lucas	Lake	Hocking
Medina	Madison	Madison	Lorain	Huron
Meigs	Mahoning	Mahoning	Lucas	Lake
Miami	Marion	Marion	Mahoning	Lorain
Monroe	Miami	Miami	Marion	Lucas
Montgomery	Monroe	Monroe	Meigs	Mahoning
Muskingum	Montgomery	Montgomery	Mercer	Marion
Noble	Morrow	Morrow	Miami	Meigs
Paulding	Muskingum	Muskingum	Montgomery	Mercer
Sandusky	Paulding	Paulding	Morrow	Miami
Scioto	Ross	Perry	Muskingum	Montgomery
Seneca	Sandusky	Ross	Paulding	Morrow
Shelby	Scioto	Sandusky	Perry	Muskingum
Stark	Seneca	Scioto	Richland	Paulding
Summit	Shelby	Seneca	Ross	Perry
Trumbull	Stark	Shelby	Sandusky	Richland
Union	Summit	Stark	Scioto	Ross
Washington	Trumbull	Summit	Seneca	Sandusky
	Union	Trumbull	Shelby	Scioto
	Washington	Tuscarawas	Stark	Seneca
	Wayne	Union	Summit	Shelby
	Wood	Washington	Trumbull	Stark
		Wayne	Tuscarawas	Summit
		Wood	Union	Trumbull
			Washington	Tuscarawas
			Wayne	Union
			Wood	Washington
				Wayne
				Wood
OKLAHOMA				
Ottawa	Ottawa	Ottawa	Ottawa	Carter
				Leflore
				Muskogee
				Oklahoma
				Pittsburg
OREGON				
		Coos	Coos	Clackamas
				Coos
				Douglas
				Jackson
				Klamath

TABLE 1.—*List of counties, or districts, in which, as of January 1, 1921, 1922, 1923, 1924, and 1925, respectively, rural sections were provided with local health service under whole-time health officers*—Continued

1921	1922	1923	1924	1925
		SOUTH CAROLINA		
Calhoun Charleston Cherokee Darlington Fairfield Lee Newberry Orangeburg	Charleston Cherokee Darlington Fairfield Greenville Newberry Orangeburg	Charleston Cherokee Darlington Fairfield Greenville Newberry Orangeburg	Aiken Anderson Charleston Cherokee Dillon Fairfield Greenville Newberry Orangeburg	Aiken Anderson Beaufort Charleston Cherokee Colleton Darlington Dillon Fairfield Georgetown Greenville Marion Newberry Orangeburg
		SOUTH DAKOTA		
	Brown	Brown	Brown	Brown Pennington Yankton
		TENNESSEE		
	Davidson Montgomery Roane Williamson	Davidson Gibson Montgomery Roane Williamson	Blount Davidson Gibson Montgomery Obion Roane Sevier Williamson	Blount Davidson Gibson Montgomery Obion Roane Rutherford Sevier Williamson
		TEXAS		
Bell Dallas Jefferson Tarrant Wichita Williamson	Dallam Dallas Hidalgo Jefferson Tarrant	Cherokee Dallam Dallas Hidalgo Jefferson Tarrant	Dallam Hidalgo Jefferson Red River Tarrant Washington	Falls Hidalgo Nueces Tarrant
		UTAH		
	Weber	Weber	Weber	Davis Weber
		VERMONT [1]		
First Second Third Fourth Fifth Sixth Seventh Eighth Ninth Tenth	First Second Third Fourth Fifth Sixth Seventh Eighth Ninth Tenth	First Second Third Fourth Fifth Sixth Seventh Eighth Ninth Tenth		

[1] Districts.

Table 1.—*List of counties, or districts, in which, as of January 1, 1921, 1922, 1923, 1924, and 1925, respectively, rural sections were provided with local health service under whole-time health officers*—Continued

1921	1922	1923	1924	1925
		VIRGINIA		
Albemarle	Albemarle	Albemarle	Accomac	Accomac
Arlington	Arlington	Arlington	Albemarle	Albemarle
Augusta	Augusta	Augusta	Arlington	Arlington
Clarke	Fairfax	Fairfax	Augusta	Augusta
Fairfax	Fauquier	Halifax	Fairfax	Brunswick
Fauquier	Halifax	Nansemond	Halifax	Fairfax
Halifax	Norfolk	Norfolk	Henrico	Halifax
Henry	Tazewell	Russell	James City	Henrico
Norfolk	Wise	Wise	Loudoun	Isle of Wight
Tazewell			Nansemond	James City
			Norfolk	Nansemond
			Princess Anne	Northampton
			Russell	Wise.
			Wise	
		WASHINGTON		
King	King	Chelan	Chelan	Chelan
Spokane	Spokane	King	King	King
Walla Walla	Walla Walla	Spokane	Spokane	Spokane
Yakima	Yakima	Yakima	Walla Walla	Walla Walla
			Yakima	Yakima
		WEST VIRGINIA		
Greenbrier	Greenbrier	Logan	Hancock	Gilmer
	Logan	Marion	Harrison	Hancock
	Mingo	Mingo	Logan	Harrison
		Preston	Marion	Logan
			Preston	Marion
			Taylor	Marshall
				Preston
				Taylor
		WYOMING		
			Natrona	Natrona

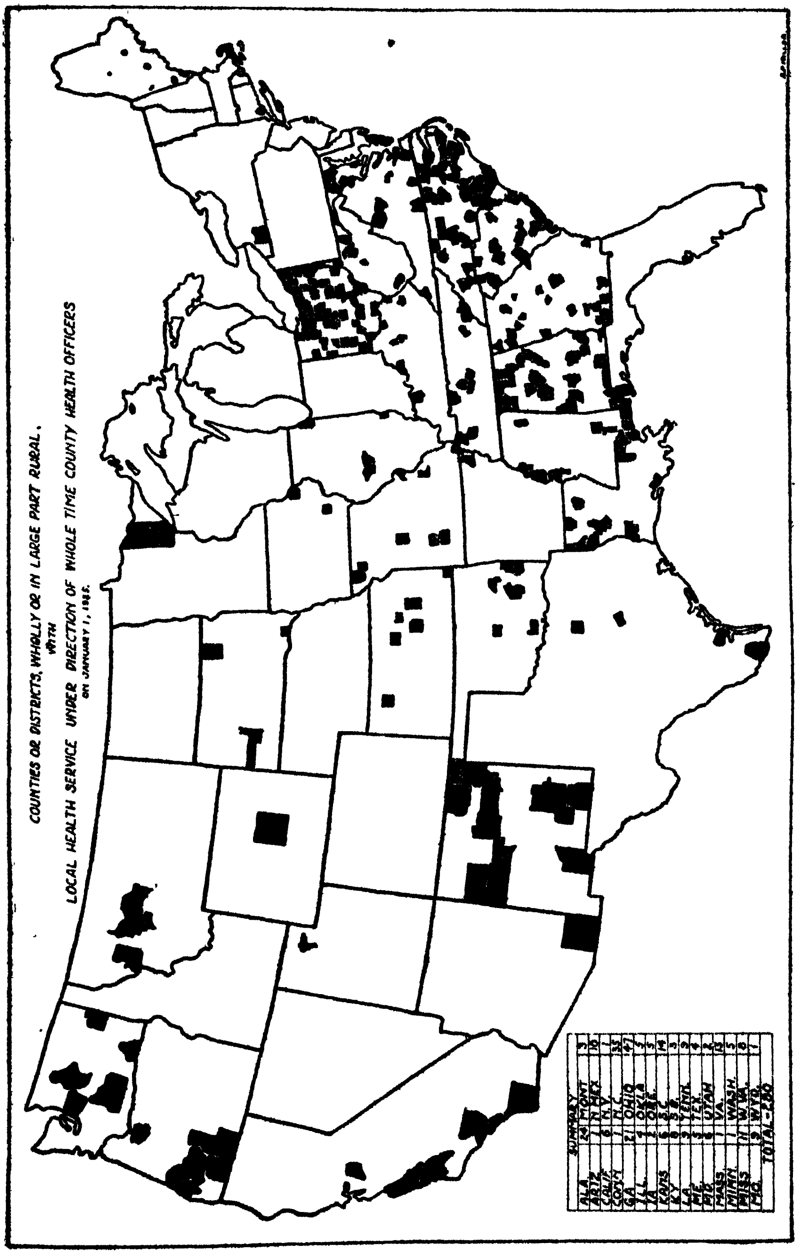
Résumé of Table 1

State	Number of counties, January 1— 1921	1922	1923	1924	1925	Increase or decrease in 1921	Increase or decrease in 1922	Increase or decrease in 1923	Increase or decrease in 1924
Alabama	16	18	19	22	24	+2	+1	+3	+2
Arizona	0	0	0	0	1				+1
California	0	1	4	5	6	+1	+3	+1	+1
Connecticut	0	0	0	0	1				+1
Georgia	17	18	18	19	21	+1		+1	+2
Idaho	0	3	0	0	0	+3	−3		
Illinois	0	0	1	1	4		+1		+3
Indiana	0	0	1	0	0		+1	−1	
Iowa	0	1	1	2	2	+1		+1	
Kansas	5	8	8	8	6	+3			−2
Kentucky	8	8	8	9	8			+1	−1
Louisiana	1	7	7	10	9	+6		+3	−1
Maine	0	0	5	5	5		+5		
Maryland	0	1	2	3	6	+1	+1	+1	+3
Massachusetts	0	1	1	1	1	+1			
Minnesota	0	0	0	1	1			+1	
Mississippi	4	9	12	10	11	+5	+3	−2	+1
Missouri	1	2	11	9	9	+1	+9	−2	
Montana	3	4	4	3	3	+1		−1	
New Mexico	5	7	8	10	10	+2	+1	+2	
New York	0	0	0	1	1			+1	
North Carolina	25	29	29	33	35	+4		+4	+2
Ohio	36	40	42	45	47	+4	+2	+3	+2
Oklahoma	1	1	1	1	5				+4
Oregon	0	0	1	1	5		+1		+4
South Carolina	8	7	7	9	14	−1		+2	+5
South Dakota	0	1	1	1	3	+1			+2
Tennessee	0	4	5	8	9	+4	+1	+3	+1
Texas	6	5	6	6	4	−1	+1		−2
Utah	0	1	1	1	2	+1			+1
Vermont	10	10	10	0	0			−10	
Virginia	10	9	9	14	13	−1		+5	−1
Washington	4	4	4	5	5			+1	
West Virginia	1	3	4	6	8	+2	+1	+2	+2
Wyoming	0	0	0	1	1			+1	
Total	161	202	230	250	280	+41	+28	+20	+30

The accompanying map shows the counties or districts in the United States in which, as of January 1, 1925, the rural sections were provided with local health service under whole-time, local (county or district) health officers.

The net gain of 30 counties in 1924 is cause for encouragement to all persons interested in this much-needed economical and effective development for the conservation and promotion of the health of the people of the United States. Most of the increases during the year were made in States in which the respective State health departments, with the cooperation of the United States Public Health Service or the International Health Board, or both, were enabled to give encouragement, technical advice, and financial assistance to county or district health departments.

Without moral support and financial assistance from outside sources, local governments of rural communities (counties, towns, townships, or districts) evidently are not disposed to appropriate adequately for the support of efficient, whole-time, local health service. As health conditions in a rural community in one State influence importantly those in other communities in that and in other States,


COUNTIES OR DISTRICTS, WHOLLY OR IN LARGE PART RURAL,
WITH
LOCAL HEALTH SERVICE UNDER DIRECTION OF WHOLE TIME COUNTY HEALTH OFFICERS
ON JANUARY 1, 1925.
SUMMARY
ALA. 24 MONT. 3
ARIZ. 1 N. MEX. 10
CALIF. 6 N.Y. 1
CONN. 1 N.C. 35
GA. 21 OHIO 47
ILL. 4 OKLA. 3
IA. 1 ORE. 5
KANS. 6 S.C. 14
KY. 8 S.D. 3
LA. 3 TENN. 9
ME. 3 TEX. 4
MD. 6 UTAH 2
MASS. 1 VA. 13
MINN. 1 WASH. 5
MISS. 11 W.VA. 6
MO. 9 WYO. 1
TOTAL - 280

it seems proper for the State and the Federal Government to participate in due proportion in the development and maintenance of efficient, economical, official, local health service. Yet for only a very small proportion of our State health departments are sufficient funds provided to enable the State government to meet to a degree approaching adequacy its responsibilities in the field of rural health service, and the United States Public Health Service has been provided for the last five years with annual appropriations of only $50,000 to $75,000 for rural sanitation.

At the rate of progress made since 1920, it will take about 85 years for whole-time rural health service to be extended to all communities of the United States in which such service is needed.

Reasonably adequate whole-time rural health service throughout this country would cost about $20,000,000 a year, and, through the prevention of sickness, death, and loss in earnings, would effect a saving to the people of over $1,000,000,000--or a net saving every year of over $980,000,000.

Table 2 presents, by States, the percentage of rural population having local health service under the direction of whole-time county (or district) health officers at the beginning of 1925.

TABLE 2.—*Percentage of rural population having, on January 1, 1925, local health service under whole-time county or district health officers*

State	Rural population (census, 1920)	Rural population with local health service under direction of whole-time health officers	Percentage of rural population with local health service under direction of whole-time health officers
Alabama	1, 838, 857	807, 058	43. 88
Arizona	216, 635	27, 344	12. 62
Arkansas	1, 461, 707	0	0
California	1, 095, 132	269, 879	24. 64
Colorado	486, 370	0	0
Connecticut	444, 292	11, 475	2. 58
Delaware	102, 236	0	0
Florida	612, 645	0	0
Georgia	2, 167, 973	380, 602	17. 55
Idaho	312, 829	0	0
Illinois	2, 082, 127	164, 283	7. 89
Indiana	1, 447, 535	0	0
Iowa	1, 528, 526	34, 845	2. 28
Kansas	1, 151, 293	82, 055	7. 12
Kentucky	1, 783, 087	142, 948	8. 01
Louisiana	1, 170, 346	217, 638	18. 59
Maine	468, 445	25, 631	5. 47
Maryland	580, 239	225, 038	38. 78
Massachusetts	202, 108	16, 562	8. 19
Michigan	1, 426, 852	0	0
Minnesota	1, 335, 532	50, 898	3. 81
Mississippi	1, 550, 497	244, 125	15. 75
Missouri	1, 817, 152	251, 578	13. 84
Montana	376, 878	32, 711	8. 67
Nebraska	891, 066	0	0
Nevada	62, 153	0	0
New Hampshire	163, 322	0	0
New Jersey	680, 964	0	0
New Mexico	295, 390	120, 182	40. 68
New York	1, 795, 383	39, 708	2. 21
North Carolina	2, 068, 753	935, 303	45. 21
North Dakota	558, 633	0	0

TABLE 2.—*Percentage of rural population having, on January 1, 1925, local health service under whole-time county or district health officers*—Continued

State	Rural population (census, 1920)	Rural population with local health service under direction of whole-time health officers	Percentage of rural population with local health service under direction of whole-time health officers
Ohio	2,082,258	1,248,522	59.96
Oklahoma	1,488,603	159,592	10.70
Oregon	392,370	80,896	20.61
Pennsylvania	3,112,202	0	0
Rhode Island	15,217	0	0
South Carolina	1,389,737	492,465	35.43
South Dakota	534,675	32,124	6.00
Tennessee	1,726,659	242,351	14.03
Texas	3,150,539	108,659	3.44
Utah	233,812	22,109	9.45
Vermont	242,452	0	0
Virginia	1,635,203	307,015	18.77
Washington	607,886	166,531	27.40
West Virginia	1,094,694	195,523	17.86
Wisconsin	1,387,499	0	0
Wyoming	137,054	3,188	2.32
Total	51,406,017	7,138,838	13.88

The lack at this time of official local health service approaching adequacy among over 86 per cent of our rural population is, in view of every salient fact in the situation, a matter of portentous seriousness and one which should be given the prompt and vigorous attention of all who have a genuine interest in our national welfare.

SUMMARY OF PROVISIONAL BIRTH, DEATH, AND INFANT MORTALITY RATES, 1924

The Department of Commerce announces that birth rates for 1924 were higher than for 1923 in 16 of the 25 States for which figures for the two years are shown in the accompanying summary. The highest 1924 birth rate (31.9 per 1,000 population) is shown for rural districts of North Carolina, and the lowest (14.9) is for rural districts of Montana.

Death rates for 1924 were lower than for 1923 in 23 of the 29 States shown for both years, record low rates appearing for the following 13 States: Connecticut, Delaware, Kansas, Kentucky, Maine, Massachusetts, Montana, Nebraska, Ohio, Pennsylvania, Vermont, Virginia, and Wisconsin. The following 6 States have higher rates for 1924 than for 1923: California, Florida, Mississippi, Oregon, South Carolina, and Washington. The highest 1924 death rate (22.1 per 1,000 population) is shown for the urban districts of Mississippi, and the lowest (6.5) for the rural districts of Montana.

Infant mortality rates for 1924 are generally lower than those for 1923, as only 3 of the 25 States show higher rates in 1924. The highest 1924 infant mortality rate (121.6) appears for the urban

districts of South Carolina, and the lowest (51) for the rural districts of Nebraska. Infant mortality rates are shown for both years for 44 cities of 100,000 population or more in 1920. For 36 of these cities the 1924 infant mortality rates are lower than those of the previous year. The highest 1924 rate (92) is for Trenton and the lowest (45.3) for Seattle.

Birth, death, and infant mortality rates (exclusive of stillbirths) for States in the birth registration area, 1923 and 1924

[The term "urban" indicates municipalities of 10,000 inhabitants or more in 1920, and the remainder of the State are included in "rural"]

Area	Rate per 1,000 population				Deaths under 1 year per 1,000 births	
	Births		Deaths			
	1924	1923	1924	1923	1924	1923
Total [1]	22.5	22.3	11.9	12.4	71.9	77.7
Urban	22.5	22.2	12.4	12.9	72.8	77.9
Rural	22.5	22.3	11.4	12.0	71.0	77.4
California	22.0	21.1	14.5	14.3	67.3	73.0
Urban	22.4	21.3	14.4	14.4	62.4	65.8
Rural	21.6	20.8	14.5	14.3	74.4	83.3
Connecticut	21.1	20.8	11.3	12.0	68.9	76.5
Urban	22.6	22.4	11.3	12.0	67.1	76.8
Rural	16.1	15.9	11.4	12.1	76.7	75.3
Delaware	18.9	19.7	12.8	14.0	95.2	104.0
Urban	19.2	19.8	11.7	13.2	90.9	98.5
Rural	18.6	19.6	14.0	14.9	99.9	109.7
Florida	24.2	(2)	14.6	13.5	83.4	(2)
Urban	24.7	(2)	16.7	15.1	89.9	(2)
Rural	24.0	(2)	13.8	12.9	80.9	(2)
Illinois	19.9	19.4	11.2	12.0	71.1	81.9
Urban	20.5	19.9	11.6	12.3	74.6	85.0
Rural	19.0	18.7	10.7	11.7	65.2	77.1
Indiana	22.3	21.7	12.2	12.9	65.3	71.0
Urban	23.3	22.3	12.4	13.1	72.7	78.5
Rural	21.6	21.3	12.1	12.7	59.2	65.2
Maine	23.6	22.6	13.6	15.0	80.7	88.5
Urban	24.7	24.5	14.8	16.5	88.2	88.7
Rural	23.2	21.9	13.1	14.4	77.3	88.4
Maryland	22.7	23.0	13.8	14.7	86.3	94.6
Urban	22.4	22.9	14.4	15.1	84.6	87.1
Rural	23.2	23.2	13.0	14.1	88.5	104.4
Michigan	24.1	23.4	11.6	12.4	72.2	80.3
Urban	24.4	24.1	11.0	11.9	75.5	85.3
Rural	23.7	22.6	12.4	13.0	67.9	73.7
Minnesota	22.0	22.5	9.7	10.1	56.5	61.7
Urban	24.2	24.3	12.0	12.5	55.7	61.9
Rural	20.7	21.6	8.4	8.9	57.0	61.5
Mississippi	24.3	24.0	11.8	11.4	71.3	68.1
Urban	27.5	24.1	22.1	20.3	94.7	85.9
Rural	24.0	24.0	10.9	10.6	69.0	66.5
Montana	16.1	17.1	7.8	8.0	65.8	71.5
Urban	21.0	22.8	13.0	12.8	71.9	72.4
Rural	14.9	15.7	6.5	6.8	63.7	71.1
Nebraska	21.5	22.6	9.0	9.5	55.2	57.3
Urban	23.7	23.8	12.8	13.1	67.5	70.5
Rural	20.9	22.3	7.9	8.4	51.0	53.2
New Hampshire	22.5	20.8	14.1	15.1	78.0	93.2
Urban	25.6	24.3	13.3	14.5	81.0	101.6
Rural	19.9	17.9	14.7	15.5	74.8	84.0
New Jersey	22.3	22.1	11.9	12.3	70.0	71.6
Urban	23.9	23.8	11.6	12.0	70.3	70.5
Rural	19.2	19.0	12.3	12.9	69.4	74.8
New York	21.2	21.2	12.8	13.0	69.1	72.1
Urban	21.8	21.9	12.2	12.4	69.6	71.2
Rural	19.1	19.0	14.8	15.4	67.1	75.7

[1] Birth registration area, exclusive of the following States, for both years, as data for 1924 are incomplete: Florida, Iowa, Kansas, Kentucky, Massachusetts, North Dakota, Rhode Island, and Utah. Death rates for Kansas, Kentucky, and Massachusetts and birth rates for Iowa will be found on p. 952.

[2] Not in the registration area in 1923.

Birth, death, and infant mortality rates (exclusive of stillbirths) for States in the birth registration area, 1923 and 1924—Continued

Area	Rate per 1,000 population				Deaths under 1 year per 1,000 births	
	Births		Deaths			
	1924	1923	1924	1923	1924	1923
North Carolina	31.6	31.3	11.9	12.0	82.7	81.0
Urban	30.1	28.4	16.2	16.2	100.7	109.5
Rural	31.9	31.8	11.1	11.3	79.8	76.8
North Dakota	20.8	(2)	7.1	(2)	66.7	(2)
Urban	30.4	(2)	12.5	(2)	67.5	(2)
Rural	19.9	(2)	6.6	(2)	66.6	(2)
Ohio	21.1	21.0	11.2	12.3	66.8	74.7
Urban	21.6	21.6	11.1	12.0	70.4	74.6
Rural	20.5	20.3	11.4	12.6	61.7	74.7
Oregon	18.6	18.2	11.3	10.9	53.3	57.3
Urban	19.5	18.6	13.1	12.6	51.4	53.2
Rural	18.0	18.0	10.2	9.9	51.6	60.0
Pennsylvania	24.2	23.9	12.3	13.3	78.8	90.4
Urban	23.5	23.3	13.3	13.9	80.4	87.0
Rural	24.8	24.5	11.3	12.5	77.0	93.9
South Carolina	26.9	25.4	12.9	11.8	101.7	96.3
Urban	26.6	26.3	21.5	20.1	121.6	116.8
Rural	26.9	25.3	11.9	10.9	99.4	93.8
Vermont	21.0	20.8	13.8	15.2	70.3	76.0
Urban	27.0	24.5	16.0	16.5	78.4	92.1
Rural	20.0	20.2	13.4	15.0	68.6	72.9
Virginia	26.5	26.8	11.9	12.8	76.9	84.0
Urban	21.7	22.4	13.3	13.8	93.1	98.4
Rural	28.2	28.3	11.5	12.5	72.4	80.1
Washington	17.4	17.6	10.0	9.7	55.8	56.5
Urban	18.9	18.9	10.7	10.3	51.6	51.0
Rural	16.1	16.5	9.3	9.1	60.3	62.2
Wisconsin	20.7	21.5	10.1	10.7	66.5	69.9
Urban	23.5	23.3	11.0	11.8	68.6	76.8
Rural	19.0	20.4	9.6	10.0	64.9	65.2
Wyoming	24.0	23.4	9.5	10.3	63.8	79.6
Urban	31.5	34.9	12.3	16.1	73.1	102.2
Rural	22.5	21.4	8.9	9.3	61.3	73.5

2 Not in the registration area in 1923.

Birth, death, and infant mortality rates (exclusive of stillbirths) for cities in the birth registration area, 1923 and 1924

[The 1924 figures are *provisional*. Cities having incomplete data for either births or deaths are shown at the end of this table. Cities designated by asterisks (*) contain either State institutions or institutions for the care of children]

City	Rate per 1,000 population				Deaths under 1 year per 1,000 births	
	Births		Deaths			
	1924	1923	1924	1923	1924	1923
California						
Alameda	17.1	16.2	10.1	10.2	50.4	40.1
Bakersfield	31.6	32.8	19.2	18.0	95.4	85.2
Berkeley	14.1	15.4	9.8	9.0	50.5	41.3
Eureka	30.8	29.0	19.1	22.5	58.1	95.9
Fresno*	24.7	25.7	9.8	11.9	59.9	89.8
Glendale*	39.5	36.8	24.8	23.7	48.2	41.6
Long Beach	27.8	27.0	14.3	15.7	40.6	41.1
Los Angeles	(1)	(1)	(1)	(1)	66.0	72.1
Oakland	18.3	17.3	11.2	10.8	65.7	62.7
Pasadena	24.9	22.1	15.3	14.7	45.3	36.5
Pomona	22.6	24.5	13.8	15.2	70.8	63.9
Richmond	16.1	15.3	6.0	6.0	60.7	60.5
Riverside	26.2	24.4	17.8	17.6	91.6	94.5
Sacramento	28.6	26.8	17.6	17.0	69.9	66.2
San Bernardino*	35.7	35.0	23.2	25.0	101.5	112.2

1 Population not estimated.

***Birth, death, and infant mortality rates (exclusive of stillbirths) for cities in the birth registration area, 1923 and 1924*—Continued**

City	Rate per 1,000 population				Deaths under 1 year per 1,000 births	
	Births		Deaths			
	1924	1923	1924	1923	1924	1923
California—Continued						
San Diego	23.1	22.9	17.2	16.8	54.8	59.3
San Francisco	16.5	16.0	13.6	13.6	55.8	58.3
San Jose	20 5	18.3	11.1	10.7	52.5	52.2
Santa Ana	28 6	29.7	17.2	16.9	111.9	80.2
Santa Barbara	20.2	21 1	12.1	13.4	63.8	61.3
Santa Cruz	21 4	20.8	19.8	23.1	29.9	26.4
Santa Monica	32 8	34.0	21.2	21.4	55.5	88.7
Stockton *	20 1	21 1	13.4	13.9	64.9	78.1
Vallejo	8.7	10.2	7 5	7.6	67.0	63 5
Venice	10.2	7.8	9.1	7.5	71.4	78.4
Connecticut						
Ansonia	16 0	18.3	8.2	9.5	116.7	97.1
Bridgeport	(1)	(1)	(1)	(1)	56.2	79.9
Bristol	25 2	23 9	8.9	10.4	79.6	77.5
Danbury town	23.1	23 8	14.3	19.2	64 0	96.0
Derby	35 3	36.3	14.6	16.6	73 9	89.2
East Hartford town	11 2	10 5	7.5	7.7	67.1	66.2
Enfield town	23 3	23.8	10.7	9.6	67.8	84.5
Fairfield town	15.7	15 4	7.8	6.9	73.1	77.3
Greenwich town	19.2	18.1	10.6	12.1	69 3	61.8
Hartford	25 9	25.4	11 6	13.1	61.8	79.3
Manchester town	22.2	20 4	8.7	9.5	52 5	70.7
Meriden town	19 4	21.4	12.4	12.1	67.3	69.3
Middletown town*	27.1	26.4	22.9	22.4	70.1	71.9
Milford town	12 2	12 8	9.3	9.5	63 7	44.6
Naugatuck borough	10 4	11.5	5.5	7.3	65 5	98.4
New Britain	24 8	25 5	9.6	8.7	77.1	79.1
New Haven	22 8	22 9	12.2	12.0	72 2	74 4
New London	27.8	27 0	14.5	15.0	59 3	83.7
Norwalk	23 6	20.2	12.5	13.7	59.2	75.1
Norwich town *	27.2	26.2	17.3	16.6	70.2	65.6
Orange town	22.2	20.9	14 0	14.8	60.0	54.1
Stamford town	29.5	24.2	13.5	11.8	67.3	59.0
Stonington town	16.0	15.5	9.1	10 4	58 1	78 8
Stratford town	15 0	14 7	8.8	8 0	73.3	59.9
Torrington town	20.7	18 8	9.5	8 3	56 8	62.2
Wallingford town	14 9	14.9	8.4	10.8	43 2	32.8
Waterbury	(1)	(1)	(1)	(1)	77 1	88.9
Windham town	24.1	25.4	12.4	15.7	49.1	88.6
Delaware						
Wilmington	19.2	19 8	11.7	13.2	90.9	98.5
District of Columbia						
Washington	19.0	18.9	13.5	14 9	76.0	91.8
Florida						
Jacksonville	22 2	(2)	17.7	17.3	97.6	(2)
Key West	18.9	(2)	12 2	11.5	93 2	(2)
Miami	40 5	(2)	22.4	18.2	102.5	(2)
Pensacola	20.3	(2)	14.2	13.4	102 0	(2)
St. Petersburg	18 9	(2)	18 8	16.9	90.0	(2)
Tampa	25 1	(2)	13.4	11.5	61.8	(2)
Illinois						
Alton	25.7	25.1	14.6	14.1	91 2	84.1
Aurora	25.3	23.8	12.6	13.3	54.9	61.4
Belleville	17.5	19.2	12 5	14.3	79.6	91.8
Berwyn	15.9	14.2	7.1	7.6	52.4	94.3
Bloomington	18.1	19 5	13.5	13.6	73.4	69.2
Blue Island	29 8	23 9	14.2	16.4	75 5	106.3
Cairo	16 9	14.2	17.7	17.0	141.2	155.3
Canton	21.7	20.8	14.6	17.4	71.1	109.2
Centralia	24.7	23.0	12.0	15.3	91.2	131.8
Champaign	21 8	20.3	12.1	11.5	92.3	59.0
Chicago	20.0	19 4	11.2	11.7	76.8	87.3
Chicago Heights	19.5	23.0	9.1	12.7	82.9	126.8

[1] Population not estimated.
[2] Not in the birth registration area in 1923.

***Birth, death, and infant mortality rates (exclusive of stillbirths) for cities in the birth registration area, 1923 and 1924*—Continued**

City	Rate per 1,000 population				Deaths under 1 year per 1,000 births	
	Births		Deaths			
	1924	1923	1924	1923	1924	1923
***Illinois*—Continued**						
Cicero	10.4	12.4	4.8	5.3	87.8	90.6
Danville	21.1	23.9	14.3	17.0	75.5	80.7
Decatur	22.1	22.0	12.3	13.4	77.0	84.3
East St. Louis	20.6	19.5	11.9	13.5	106.4	108.2
Elgin*	22.1	19.3	21.5	23.3	58.0	48.2
Evanston	34.7	31.7	11.2	11.5	43.2	45.7
Forest Park	6.3	7.7	9.0	8.6	125.0	73.7
Freeport	24.6	22.3	15.2	16.2	49.5	66.2
Galesburg	24.0	23.9	14.0	16.9	64.2	82.1
Granite City	32.3	26.5	12.2	13.7	83.2	78.7
Herrin	26.4	29.0	11.1	10.9	94.1	110.5
Jacksonville*	20.1	19.4	32.6	31.8	71.9	78.2
Joliet	19.9	20.2	11.9	12.6	91.2	102.2
Kankakee	25.8	24.8	14.0	13.5	74.5	74.3
Kewanee	18.5	19.1	10.0	12.9	89.1	85.2
La Salle	25.2	23.5	11.7	12.7	77.8	81.2
Lincoln*	21.7	18.5	16.0	21.9	67.2	137.2
Mattoon	25.3	25.9	15.8	14.3	89.9	72.8
Maywood	12.7	11.7	7.4	7.0	68.2	63.7
Moline	18.9	19.1	9.3	10.5	61.9	65.5
Murphysboro	16.1	22.3	12.0	14.5	66.3	60.6
Oak Park	43.5	37.6	14.4	13.8	29.4	37.2
Ottawa	27.1	26.0	13.6	17.7	68.0	90.0
Pekin	24.0	24.9	12.5	10.8	66.9	68.8
Peoria	16.3	17.8	13.7	15.3	84.5	89.0
Quincy	20.4	20.6	14.3	16.0	64.0	60.8
Rock Island	11.5	11.0	8.8	8.2	51.1	78.6
Rockford	21.3	19.9	9.1	10.4	57.4	86.1
Springfield	22.5	21.9	15.5	17.0	69.4	79.9
Streator	30.6	26.3	14.8	14.1	45.7	61.1
Urbana	18.8	14.8	13.2	9.9	66.7	55.6
Waukegan	20.4	20.3	10.2	11.3	68.6	118.6
Indiana						
Anderson	21.1	20.0	12.1	11.6	68.8	83.3
Bloomington	35.1	33.8	13.7	14.3	52.8	70.2
Clinton	16.8	18.2	8.4	6.9	122.2	91.3
Crawfordsville	18.6	17.8	16.4	15.1	35.9	70.3
East Chicago	24.4	24.5	10.2	10.4	139.5	123.1
Elkhart	23.4	23.5	11.1	12.9	54.7	65.4
Elwood	24.5	24.9	11.8	12.8	83.3	84.9
Evansville	19.5	19.3	11.9	11.7	68.5	72.6
Fort Wayne	25.2	22.7	11.1	12.9	56.8	62.2
Frankfort	23.2	18.4	12.2	13.3	64.0	78.3
Gary	27.4	24.5	13.0	12.5	87.7	98.7
Hammond	27.0	23.7	9.1	10.9	72.5	107.9
Huntington	23.8	21.6	11.3	12.3	56.8	30.4
Indianapolis	20.9	20.7	13.1	14.4	77.1	86.3
Jeffersonville	23.6	19.8	15.3	15.1	105.0	55.0
Kokomo	22.5	22.9	10.6	11.6	77.0	72.0
La Porte	24.7	21.8	11.9	13.8	35.5	68.9
Lafayette	29.1	30.9	19.0	20.7	53.9	50.0
Logansport	18.7	19.8	11.0	12.7	44.5	46.9
Marion	21.6	21.7	11.9	14.8	62.8	83.5
Michigan City	29.7	28.4	14.6	14.5	70.2	79.0
Mishawaka	45.9	38.6	15.5	14.3	57.1	65.9
Muncie	21.3	20.2	12.1	13.5	83.7	84.8
New Albany	23.4	21.8	13.7	13.8	42.7	41.9
New Castle	19.1	18.4	9.3	10.2	73.0	77.7
Peru	23.1	22.3	12.7	13.7	75.3	64.3
Richmond	16.2	14.9	10.2	11.2	57.4	65.7
South Bend	30.9	28.2	12.0	11.6	64.3	70.7
Terre Haute	21.0	21.4	13.9	14.0	77.9	70.7
Vincennes	24.8	23.3	16.7	14.7	91.5	72.1
Whiting	21.5	19.3	7.0	8.3	82.7	99.5
Maine						
Auburn	14.4	15.6	10.5	12.2	85.6	105.5
Augusta*	24.9	26.4	22.7	23.5	91.2	55.1
Bangor*	21.1	18.8	19.3	20.2	69.6	76.5
Bath	12.7	12.0	8.8	9.8	105.5	85.0
Biddeford	36.9	35.3	14.6	17.0	85.3	115.9
Lewiston	30.6	33.1	16.6	19.3	117.8	107.2
Portland	21.8	22.4	14.3	15.6	79.8	74.6
Sanford town	39.2	29.9	9.8	14.2	62.4	109.8
Waterville	31.6	30.9	14.3	15.0	93.3	71.6

***Birth, death, and infant mortality rates (exclusive of stillbirths) for cities in the birth registration area, 1923 and 1924*—Continued**

City	Rate per 1,000 population				Deaths under 1 year per 1,000 births	
	Births		Deaths			
	1924	1923	1924	1923	1924	1923
Maryland						
Annapolis	21.3	21.6	11.8	15.1	79.8	129.8
Baltimore	22.2	22.7	14.4	15.0	85.0	85.6
Cumberland	26.8	27.7	13.9	16.2	79.1	106.1
Frederick	26.8	27.7	20.5	25.0	93.5	79.9
Hagerstown	22.1	22.6	13.1	13.9	79.3	88.2
Michigan						
Adrian	24.4	24.0	15.6	16.0	43.0	78.0
Alpena	31.9	30.4	14.9	18.6	70.6	91.7
Ann Arbor*	31.7	33.6	29.7	28.9	66.9	109.4
Battle Creek	19.4	19.1	13.2	13.4	81.4	87.6
Bay City	23.1	21.3	12.6	12.2	49.8	93.3
Benton Harbor	30.5	26.5	16.3	13.5	84.1	68.0
Detroit	(1)	(1)	(1)	(1)	78.9	86.6
Escanaba	35.6	36.3	14.8	15.9	70.8	79.8
Flint	(1)	(1)	(1)	(1)	68.9	98.0
Grand Rapids	22.3	22.7	10.3	11.7	52.9	63.3
Hamtramck	19.7	23.1	5.4	6.2	108.2	112.4
Highland Park	22.0	23.3	8.2	8.3	71.7	62.8
Holland	26.5	27.5	10.0	10.0	58.1	48.3
Ironwood	23.2	25.5	11.4	10.3	121.2	70.1
Ishpeming	25.5	22.3	11.5	11.4	56.0	102.6
Jackson	20.2	20.2	11.6	12.2	61.7	81.6
Kalamazoo*	26.4	25.5	16.6	18.1	54.0	62.8
Lansing	24.3	23.5	10.7	11.8	74.7	80.6
Marquette	27.7	27.1	14.0	13.8	78.8	56.0
Monroe	24.2	24.6	11.4	12.3	144.1	79.8
Muskegon	28.0	28.3	12.2	14.2	70.8	85.9
Owosso	23.8	24.1	13.6	16.3	63.3	103.7
Pontiac*	22.8	23.0	14.3	14.4	91.8	81.9
Port Huron	24.1	23.7	14.3	14.5	79.5	89.0
Saginaw	23.2	21.8	12.5	14.0	75.5	85.5
Sault Ste. Marie	27.4	27.0	11.7	14.7	63.4	95.1
Traverse City*	17.2	17.0	30.2	30.9	69.1	91.4
Wyandotte	28.0	31.1	9.7	14.6	80.9	126.5
Minnesota						
Austin	24.2	25.9	9.8	11.8	67.9	75.3
Duluth	22.3	22.6	9.6	10.1	63.8	72.5
Faribault*	24.1	23.0	16.6	18.6	48.3	58.8
Hibbing	32.5	30.7	8.4	8.7	56.3	71.0
Mankato	29.8	29.3	14.8	15.7	44.9	56.8
Minneapolis	23.4	23.7	11.2	11.1	53.5	54.1
Rochester*	23.0	23.0	50.7	57.8	55.6	71.4
St. Cloud	34.1	32.1	11.5	12.4	52.9	86.0
St. Paul	25.2	25.3	12.0	12.9	56.5	66.1
Virginia	21.1	19.1	7.7	8.3	60.4	85.6
Winona	25.3	23.1	13.6	13.0	55.0	47.1
Mississippi						
Biloxi	31.1	26.1	16.6	12.9	112.6	89.5
Columbus	19.2	16.9	15.4	10.4	93.0	80.2
Greenville	22.2	22.3	23.9	23.0	96.4	91.2
Hattiesburg	30.5	19.6	16.5	9.4	75.3	40.7
Jackson*	30.8	25.8	24.3	27.2	137.7	114.6
Laurel	37.6	30.1	16.9	18.7	49.4	49.3
Meridian*	24.4	22.7	18.0	17.4	96.9	82.6
Natchez	20.6	16.4	21.6	17.8	108.6	118.5
Vicksburg*	26.6	26.2	38.6	34.2	75.0	101.3
Montana						
Anaconda	18.0	18.5	9.9	11.5	67.3	88.5
Billings	21.9	26.9	12.3	12.8	94.0	83.5
Butte	14.2	15.0	13.7	12.8	85.8	76.2
Great Falls	25.5	27.6	10.8	9.4	64.0	44.3
Helena	22.8	22.8	15.1	15.5	65.7	73.0
Missoula	33.2	36.1	16.9	18.3	52.3	96.8

[1] Population not estimated.

***Birth, death, and infant mortality rates (exclusive of stillbirths) for cities in the birth registration area, 1923 and 1924*—Continued**

City	Rate per 1,000 population				Deaths under 1 year per 1,000 births	
	Births		Deaths			
	1924	1923	1924	1923	1924	1923
Nebraska						
Grand Island	23.7	24.0	17.5	16.7	96.7	94.4
Hastings	24.5	25.0	14.3	15.8	86.8	83.3
Lincoln	22.6	23.7	12.1	11.9	57.0	55.2
North Platte	18.9	20.5	10.4	10.2	93.1	93.8
Omaha	24.3	24.0	12.7	13.2	65.8	71.1
New Hampshire						
Berlin	30.4	30.6	10.2	9.6	83.6	94.4
Concord *	21.4	17.7	19.0	21.6	53.9	80.6
Dover	23.8	23.8	14.4	15.7	87.1	77.4
Keene	26.8	21.9	16.3	16.4	76.4	47.1
Laconia	29.4	28.5	16.3	18.9	63.6	110.1
Manchester	25.7	25.0	11.9	12.8	92.6	117.2
Nashua	28.2	25.9	12.4	15.4	75.7	109.5
Portsmouth	18.2	19.1	12.4	12.0	67.7	76.4
New Jersey						
Asbury Park	15.0	15.9	10.8	13.8	59.7	85.7
Atlantic City	23.9	24.0	18.6	19.7	76.9	85.3
Bayonne	24.5	26.1	8.4	8.3	71.6	61.8
Belleville *	19.0	19.7	13.1	10.9	94.6	54.4
Bloomfield	11.2	11.8	7.1	7.0	77.7	37.9
Bridgeton	24.4	23.6	15.3	18.9	85.5	61.9
Camden	26.0	25.6	13.8	14.5	90.6	88.8
Carteret	22.5	25.2	6.5	6.3	92.1	95.1
Clifton	16.9	17.1	6.9	7.0	78.4	66.3
East Orange	5.2	6.2	6.3	8.1	66.2	56.7
Elizabeth	(1)	(1)	(1)	(1)	66.6	68.5
Englewood	48.7	41.6	20.0	19.3	72.8	41.3
Garfield	27.9	27.9	6.8	6.7	66.7	71.1
Gloucester	17.6	18.1	10.1	10.7	63.6	109.2
Hackensack	43.9	39.7	19.7	20.6	58.8	59.7
Harrison	23.7	23.3	8.8	8.1	69.9	63.8
Hoboken	21.6	21.7	14.0	13.0	71.3	74.4
Irvington	16.8	12.8	8.9	8.1	44.9	61.9
Jersey City	23.6	23.7	12.2	12.0	76.6	76.2
Kearny	16.0	18.8	10.0	10.7	65.6	53.9
Long Branch	41.6	47.2	29.0	29.4	84.7	93.5
Millville	23.0	23.3	10.9	16.0	74.6	102.5
Montclair	10.9	9.7	7.1	8.0	88.6	95.1
Morristown*	42.6	43.3	22.8	25.1	61.7	99.3
New Brunswick	30.3	27.4	14.2	14.5	58.8	68.8
Newark	25.7	25.3	11.2	11.6	64.6	67.7
Orange	49.5	46.2	15.0	16.9	45.1	42.5
Passaic	28.0	27.2	9.2	10.8	64.6	74.5
Paterson	22.0	22.0	12.1	13.1	65.2	67.5
Perth Amboy	26.3	25.8	10.5	9.4	79.9	73.7
Phillipsburg	20.8	20.7	11.5	9.5	86.4	80.4
Plainfield	31.5	29.2	13.7	14.7	55.3	69.1
Rahway	19.4	23.7	10.9	11.4	69.9	47.1
Summit	27.2	23.7	14.9	12.8	54.8	53.0
Trenton	24.5	24.6	14.4	14.0	92.0	78.1
Union	21.7	20.9	8.6	8.7	60.1	55.7
West Hoboken	18.2	19.5	6.3	6.4	52.1	50.4
West New York	17.5	17.6	5.4	5.2	33.6	44.0
West Orange	11.0	12.2	7.5	7.6	67.0	42.9
New York						
Albany	20.2	19.5	15.4	16.2	71.8	90.0
Amsterdam	23.9	25.9	11.6	11.4	52.0	61.7
Auburn	20.3	20.5	12.7	13.2	76.0	67.7
Batavia	28.8	28.8	16.2	18.3	60.5	100.7
Beacon*	18.8	17.9	17.0	19.2	101.0	55.6
Binghamton*	20.4	20.7	14.2	15.9	74.1	72.5
Buffalo	23.6	23.0	12.7	13.5	84.2	89.8
Cohoes	23.0	21.4	12.7	13.7	83.3	101.4
Corning	24.4	23.1	13.2	15.1	70.7	86.2
Cortland	26.1	24.1	18.6	18.1	103.3	74.4
Dunkirk	24.9	25.2	13.3	13.9	81.2	86.8
Elmira	22.6	22.0	13.4	14.0	88.9	93.2
Fulton	24.0	24.6	11.2	14.0	76.2	99.1
Geneva	24.4	23.3	13.8	14.5	65.3	91.9
Glens Falls	24.2	23.6	18.3	15.6	95.5	74.3

[1] Population not estimated.

***Birth, death, and infant mortality rates (exclusive of stillbirths) for cities in the birth registration area, 1923 and 1924*—Continued**

City	Rate per 1,000 population				Deaths under 1 year per 1,000 births	
	Births		Deaths			
	1924	1923	1924	1923	1924	1923
New York—Continued						
Gloversville	18.2	19.7	16.0	14.7	58.1	58.6
Herkimer	22.1	26.7	11.3	15.6	65.1	74.9
Hornell	19.0	20.0	12.4	14.0	63.8	80.4
Hudson	30.9	31.3	19.2	18.3	73.8	62.2
Ilion	18.5	14.8	13.9	12.5	86.8	94.1
Ithaca	24.7	24.1	17.0	17.6	53.8	72.3
Jamestown	21.8	22.1	12.7	12.9	70.1	68.6
Johnstown	10.6	11.9	11.8	13.3	59.3	136.4
Kingston	22.1	21.4	19.0	19.6	66.8	98.6
Lackawanna*	46.7	44.3	14.5	20.5	102.2	161.7
Little Falls	24.5	21.8	13.1	11.3	82.3	72.4
Lockport	21.8	21.5	13.4	14.4	41.1	92.4
Middletown*	18.8	16.5	22.1	21.6	56.1	74.5
Mount Vernon	21.1	22.3	9.2	9.5	61.9	49.5
New Rochelle	20.0	18.0	9.8	8.9	49.1	47.3
New York	21.6	21.7	11.8	11.7	67.7	66.6
Bronx Borough	17.4	17.7	9.3	9.0	59.7	56.3
Brooklyn Borough	23.1	22.8	10.8	11.1	63.5	59.7
Manhattan Borough	22.1	22.7	14.0	13.4	73.9	76.3
Queens Borough	20.3	19.4	10.2	11.1	69.2	67.1
Richmond Borough	22.3	22.4	16.6	13.2	69.2	62.3
Newburgh	19.8	20.4	15.1	15.9	62.4	68.9
Niagara Falls	26.7	26.5	9.4	11.0	62.3	83.7
North Tonawanda	20.7	21.2	11.7	12.4	93.0	109.6
Ogdensburg*	28.5	26.1	31.1	33.4	107.9	141.7
Olean	21.7	24.1	12.3	13.7	73.6	91.9
Oneida	23.9	20.7	13.9	17.5	54.3	102.1
Oneonta	21.4	22.2	15.5	18.7	74.3	102.2
Ossining	24.2	24.8	16.3	16.6	46.2	45.1
Oswego	19.1	22.6	12.5	15.6	92.5	110.3
Peekskill	23.1	22.2	11.9	14.5	70.1	78.9
Plattsburg	31.6	30.0	21.8	21.7	89.9	107.0
Port Chester	34.9	31.9	11.2	14.3	53.2	66.4
Port Jervis	21.4	22.2	18.2	15.2	93.8	86.6
Poughkeepsie	17.9	20.3	13.2	14.6	91.8	85.2
Rensselaer	9.3	10.8	9.7	11.6	79.2	102.6
Rochester	20.1	20.7	11.1	11.6	58.8	68.1
Rome*	25.3	23.5	17.2	19.4	58.4	82.3
Saratoga Springs	22.5	22.5	21.3	17.9	40.4	60.8
Schenectady	18.5	17.8	10.0	10.4	65.3	69.4
Syracuse	22.1	22.7	12.0	13.0	69.4	82.8
Tonawanda	20.8	20.6	9.5	8.5	70.5	45.2
Troy	21.0	19.6	18.3	18.1	92.1	100.4
Utica*	23.1	23.1	14.9	15.4	81.0	81.1
Watertown	25.3	23.9	16.0	16.1	95.7	82.6
Watervliet	13.4	17.3	10.2	11.4	126.7	84.2
White Plains	23.7	23.8	11.7	11.2	49.8	35.6
Yonkers	21.7	22.2	9.9	10.1	72.1	58.6
North Carolina						
Asheville*	31.5	26.4	24.0	25.2	105.7	133.8
Charlotte	31.8	29.3	15.6	15.3	79.2	101.5
Durham	25.4	26.9	17.7	15.8	119.7	135.9
Gastonia	41.0	42.4	10.7	16.3	54.4	99.4
Goldsboro*	27.4	29.1	17.5	18.8	125.0	159.3
Greensboro	30.8	25.6	11.8	12.0	69.2	78.0
High Point	35.1	32.2	14.5	11.2	93.4	69.6
New Berne	24.4	21.9	18.0	18.3	127.5	134.8
Raleigh*	30.1	28.2	20.7	23.6	108.4	122.6
Rocky Mount	34.3	33.8	18.9	17.4	95.2	105.8
Salisbury	26.8	25.3	10.7	11.0	61.5	80.1
Wilmington	27.0	27.9	15.7	14.9	128.2	90.2
Wilson	36.1	33.2	17.2	17.3	100.4	102.8
Winston-Salem	29.0	26.3	15.9	14.5	137.5	139.5
North Dakota						
Fargo	30.8	[2]	13.2	[2]	78.5	[2]
Grand Forks	33.7	[2]	11.2	[2]	40.4	[2]
Minot	25.6	[2]	12.8	[2]	82.8	[2]

[2] Not in the registration area in 1923.

***Birth, death, and infant mortality rates (exclusive of stillbirths) for cities in the birth registration area, 1923 and 1924*—Continued**

City	Rate per 1,000 population: Births 1924	Births 1923	Deaths 1924	Deaths 1923	Deaths under 1 year per 1,000 births: 1924	1923
Ohio						
Akron	(1)	(1)	(1)	(1)	61.1	65.7
Alliance	21.0	22.7	10.6	11.2	80.1	68.6
Ashtabula	24.6	24.7	11.4	12.1	61.1	68.3
Barberton	22.0	20.7	9.9	9.5	87.0	96.0
Bellaire	24.4	23.9	12.0	12.6	115.1	105.8
Bucyrus	17.8	18.6	11.1	11.7	58.5	67.0
Cambridge	23.2	27.4	13.1	14.8	40.5	53.3
Canton	24.1	24.1	10.1	10.4	80.7	61.8
Chillicothe	25.0	25.7	14.2	14.8	75.4	97.9
Cincinnati	21.6	20.5	15.2	16.1	78.8	79.9
Cleveland	23.0	23.2	10.2	10.8	66.1	67.2
Cleveland Heights	4.1	4.4	8.7	9.0	46.5	103.4
Columbus	21.2	21.1	13.2	15.3	65.3	75.5
Coshocton	17.8	19.7	12.1	14.8	83.7	45.0
Cuyahoga Falls	18.8	20.2	7.4	9.3	28.5	75.7
Dayton	19.6	18.9	10.9	11.8	72.1	79.4
East Cleveland	3.2	5.0	6.4	6.6	149.1	82.4
East Liverpool	30.1	26.2	14.1	15.0	60.8	91.1
East Youngstown	27.1	30.8	7.8	8.6	110.8	119.5
Elyria	22.7	23.4	11.2	11.0	56.8	45.2
Findlay	20.6	19.7	13.6	15.3	78.0	77.1
Fremont	15.5	17.7	8.8	10.5	75.5	67.5
Hamilton	27.7	26.1	12.7	13.5	69.9	75.0
Ironton*	26.9	28.9	15.8	16.9	90.4	104.1
Kenmore	20.3	23.5	4.4	5.0	62.2	57.2
Lakewood	13.1	14.5	7.4	8.4	55.1	76.8
Lancaster	23.3	22.8	14.4	14.6	70.3	65.9
Lima	24.1	23.7	12.4	13.6	72.6	66.0
Lorain	25.5	24.8	10.2	11.1	54.9	94.6
Mansfield	21.2	19.8	10.7	12.7	68.2	73.3
Marietta	20.9	19.8	14.6	14.5	100.6	53.2
Marion	20.6	20.0	10.2	13.4	59.9	97.4
Martins Ferry	19.3	23.5	13.5	15.6	108.5	98.3
Massillon	23.7	23.6	13.0	12.7	64.6	66.1
Middletown	29.1	29.4	9.8	10.4	73.0	80.9
New Philadelphia	23.4	23.4	9.4	9.9	25.4	70.4
Newark	20.2	19.3	12.5	14.2	81.4	68.5
Niles	20.9	20.7	5.8	7.1	62.5	92.9
Norwood	7.0	7.4	6.4	5.7	93.1	62.8
Piqua	19.2	20.7	15.1	15.1	79.2	68.1
Portsmouth	28.0	27.9	13.6	14.2	92.3	101.9
Salem	26.3	25.3	15.5	17.5	59.0	62.3
Sandusky	22.2	21.6	13.0	13.8	53.9	69.6
Springfield	18.7	19.8	12.1	13.2	59.8	91.5
Steubenville	25.1	23.1	15.2	15.6	94.1	81.7
Tiffin	17.1	18.2	13.7	15.9	106.9	83.3
Toledo	20.7	20.6	11.7	12.6	69.2	74.2
Warren	26.2	25.5	12.0	12.2	65.4	70.2
Youngstown	27.3	25.4	10.7	11.3	72.8	86.7
Zanesville	26.9	24.3	16.0	16.2	89.7	99.9
Oregon						
Astoria	17.6	16.8	9.8	11.1	42.4	68.7
Eugene	39.3	30.7	20.6	15.6	29.7	41.4
Portland	18.7	18.4	11.7	11.2	53.6	52.7
Salem	20.4	15.3	32.6	33.1	53.2	61.9
Pennsylvania						
Allentown	20.8	21.2	13.1	14.2	97.9	94.9
Altoona	26.5	24.8	11.0	12.5	54.9	72.1
Ambridge	21.6	26.4	5.5	7.5	71.2	63.7
Beaver Falls	24.2	21.5	10.6	14.6	91.5	81.5
Berwick	25.7	25.0	10.3	11.7	72.2	83.6
Bethlehem	21.9	23.8	7.6	8.7	62.0	68.2
Braddock	33.3	34.7	18.1	17.1	116.8	86.1
Bradford	25.1	25.2	16.0	15.4	53.0	63.1
Bristol	28.2	27.5	10.4	11.4	80.8	72.0
Butler	23.2	25.4	10.8	10.6	57.1	55.7
Cannonsburg	25.4	23.7	9.7	9.0	75.8	71.2
Carbondale	30.4	25.0	15.1	15.4	98.5	110.2
Carlisle	21.6	23.7	18.1	16.7	79.4	94.7

[1] Population not estimated.

Birth, death, and infant mortality rates (exclusive of stillbirths) for cities in the birth registration area, 1923 and 1924—Continued

City	Rate per 1,000 population				Deaths under 1 year per 1,000 births	
	Births		Deaths			
	1924	1923	1924	1923	1924	1923
Pennsylvania—Continued						
Carnegie	25.4	26.7	8.4	8.8	77.4	93.2
Carrick	20.0	18.8	7.8	8.3	71.7	48.5
Chambersburg	22.5	20.3	13.8	15.1	74.0	97.1
Charleroi	21.9	21.1	6.3	8.1	103.3	65.9
Chester	23.4	23.6	10.3	12.8	87.3	97.6
Coatesville	17.4	17.5	7.1	8.5	75.0	87.3
Columbia	26.3	23.6	14.5	14.8	101.8	58.6
Connellsville	21.9	22.1	12.2	12.9	80.1	109.0
Dickson City	30.1	28.5	7.8	7.0	78.7	81.1
Donora	29.0	28.5	7.3	7.1	91.9	94.5
Du Bois	27.2	26.0	12.1	12.4	62.2	115.1
Dunmore	24.2	25.5	11.9	11.8	142.3	151.6
Duquesne	25.1	25.2	9.0	8.7	120.4	115.9
Easton	21.6	21.6	17.0	17.1	84.4	97.4
Erie	(1)	(1)	(1)	(1)	66.8	68.0
Farrell	23.1	23.6	9.2	8.3	145.6	106.8
Greensburg	27.0	27.0	17.1	18.5	56.6	101.4
Harrisburg	20.6	19.8	14.3	15.1	75.6	86.5
Hazelton	28.6	26.9	12.4	12.3	79.8	93.1
Homestead	24.8	23.3	14.6	9.6	115.7	83.3
Jeanette	28.9	29.8	7.5	10.1	88.9	106.5
Johnstown	32.3	29.0	13.2	15.1	82.3	89.6
Lancaster	25.9	27.0	17.2	17.0	84.3	81.1
Lebanon	23.5	25.0	16.3	16.0	90.0	107.4
McKees Rocks	25.6	26.3	8.1	11.1	72.1	124.2
McKeesport	28.5	28.0	16.4	14.4	97.9	78.3
Mahanoy City	22.2	21.7	11.0	11.7	95.1	124.3
Meadville	24.4	22.7	14.1	15.8	61.3	72.3
Monessen	27.5	28.8	8.5	6.4	105.4	69.0
Mount Carmel	33.8	30.1	11.8	10.4	84.7	104.6
Nanticoke	31.2	29.1	14.2	14.9	88.2	111.9
New Castle	28.9	28.4	12.3	11.2	77.7	82.0
New Kensington	32.6	34.4	14.5	17.3	65.9	66.5
Norristown*	23.8	22.6	20.2	22.6	85.5	108.1
North Braddock	25.8	26.1	8.0	9.1	118.2	88.5
Oil City	23.6	21.6	11.6	11.8	70.4	77.5
Old Forge	29.5	30.2	12.3	9.3	96.3	100.3
Olyphant	23.2	25.1	7.6	8.1	117.2	76.1
Philadelphia	21.2	21.2	12.9	13.8	75.2	79.6
Phoenixville	31.1	31.9	18.1	18.2	79.8	107.8
Pittsburgh	25.1	24.8	15.5	15.8	91.8	98.1
Pittston	33.8	29.8	11.8	16.4	80.2	128.7
Plymouth	29.4	25.2	10.0	8.2	76.3	72.3
Pottstown	23.7	21.1	14.0	16.9	64.5	104.7
Pottsville	27.0	24.6	20.5	18.3	93.3	97.6
Punxsutawney	25.5	26.3	15.1	18.4	89.9	141.3
Reading	21.2	21.4	13.5	13.6	79.0	85.2
Scranton	23.1	21.1	13.9	13.6	86.3	97.6
Shamokin	23.6	21.9	9.1	10.3	58.8	86.7
Sharon	23.0	23.0	12.4	13.7	78.4	76.8
Shenandoah	29.8	30.3	11.7	11.5	100.5	118.8
Steelton	21.9	24.5	9.5	13.1	105.4	127.7
Sunbury	20.7	21.0	11.0	11.9	58.1	81.2
Swissvale	16.1	14.3	8.0	8.8	59.4	97.7
Tamaqua	19.8	17.6	7.0	9.8	55.4	101.7
Uniontown	39.4	35.4	21.8	21.7	58.3	86.5
Warren	28.6	26.7	14.6	12.8	65.4	45.6
Washington	31.9	29.8	14.1	17.9	89.8	110.6
West Chester*	35.0	35.2	25.8	31.9	119.5	138.3
Wilkes-Barre	29.6	26.8	15.9	15.9	65.8	90.4
Wilkinsburg	23.6	22.4	14.6	15.8	53.7	71.4
Williamsport	22.6	24.6	14.0	15.7	67.0	75.0
Woodlawn	26.9	30.5	7.6	8.7	86.0	98.6
York	23.1	23.6	13.7	13.9	75.4	76.9
South Carolina						
Anderson	46.5	42.4	26.7	24.8	92.0	97.4
Charleston	23.7	24.3	20.3	20.3	153.4	149.9
Columbia*	26.0	25.8	27.4	25.0	103.3	105.4
Florence	32.9	31.5	27.5	24.9	128.3	141.0
Greenville	26.0	25.0	15.3	14.9	83.9	96.3
Spartanburg	24.6	24.4	16.6	12.7	126.8	61.9

[1] Population not estimated.

***Birth, death, and infant mortality rates (exclusive of stillbirths) for cities in the birth registration area, 1923 and 1924*—Continued**

City	Rate per 1,000 population				Deaths under 1 year per 1,000 births	
	Births		Deaths			
	1924	1923	1924	1923	1924	1923
Vermont						
Barre	24.2	19.3	13.9	17.1	74.4	72.5
Burlington	30.7	28.5	16.5	15.9	88.7	104.0
Rutland	22.6	21.3	16.3	16.9	59.7	79.0
Virginia						
Alexandria	28.9	27.2	16.5	15.9	99.8	114.5
Charlottesville	22.1	27.7	12.9	16.5	89.4	75.4
Danville	28.1	29.1	15.4	16.0	103.4	93.3
Lynchburg	27.3	29.1	15.3	15.5	76.0	71.6
Newport News	11.6	16.5	7.5	9.5	91.1	81.5
Norfolk	17.3	18.4	10.6	11.5	81.6	97.1
Petersburg	21.7	21.3	15.2	15.1	143.8	102.9
Portsmouth	19.2	20.0	12.0	11.2	122.9	98.8
Richmond	23.7	23.8	15.3	15.6	87.6	110.0
Roanoke	31.9	32.2	13.6	14.4	85.0	91.2
Staunton*	17.9	15.4	28.1	29.0	126.3	91.5
Washington						
Aberdeen	24.0	24.5	10.9	11.3	31.2	36.0
Bellingham	23.6	22.7	12.3	13.5	58.3	69.5
Everett	20.9	17.7	11.5	11.5	56.1	73.0
Hoquiam	23.0	21.8	9.0	9.9	67.7	59.8
Seattle	(1)	(1)	(1)	(1)	45.3	49.7
Spokane	(1)	(1)	(1)	(1)	51.7	48.3
Tacoma	21.7	21.3	11.1	10.9	56.8	48.4
Vancouver	17.8	18.2	11.0	10.9	71.4	31.7
Walla Walla	21.5	24.1	13.5	12.0	48.0	53.5
Yakima	27.9	29.2	15.6	15.1	75.8	59.4
Wisconsin						
Appleton	23.2	24.5	15.5	13.5	103.5	49.6
Ashland	27.9	25.4	23.0	15.7	75.9	66.0
Beloit	22.7	22.7	9.9	12.3	51.0	60.0
Eau Claire*	28.6	31.8	15.3	17.2	69.5	60.2
Fond du Lac	27.3	27.7	14.2	15.0	61.5	69.0
Green Bay	29.6	28.6	15.7	17.9	66.1	93.9
Janesville	20.5	18.9	11.2	11.3	67.3	53.2
Kenosha	21.5	20.1	7.3	8.7	58.0	89.5
La Crosse	30.2	28.9	17.3	16.4	56.6	71.8
Madison	24.8	24.4	11.9	13.3	49.0	70.3
Manitowoc	22.5	21.8	11.3	12.4	81.3	107.4
Marinette	23.7	20.2	14.7	13.8	126.9	47.3
Milwaukee	22.6	22.7	9.8	10.8	70.3	78.7
Oshkosh	22.5	22.0	13.6	14.6	73.6	78.1
Racine	19.1	21.4	8.1	9.6	64.3	77.5
Sheboygan	24.9	22.9	11.6	12.5	55.9	79.0
Stevens Point	26.8	26.0	13.0	12.9	88.8	77.9
Superior	22.0	21.8	11.0	10.9	65.3	86.6
Waukesha	23.0	22.4	9.0	11.4	69.9	51.3
Wausau	29.8	28.0	14.7	13.5	86.0	65.5
West Allis	25.8	22.9	7.6	8.3	61.4	96.5
Wyoming						
Casper	35.9	41.0	12.9	18.9	74.0	99.8
Cheyenne	25.8	28.3	11.4	13.1	71.4	105.8

[1] Population not estimated.

Birth or death rates per 1,000 population, for the States and cities in the birth registration area from which either birth or death transcripts only have been received for the year

Area	Death rate per 1,000 population	
	1924	1923
Kansas	9.9	11.0
Urban	13.0	14.0
Rural	8.8	10.0
Arkansas City	15.0	14.5
Atchison	15.2	14.0
Chanute	13.4	16.1
Coffeyville	12.5	14.1
El Dorado	6.9	9.0
Emporia	16.9	16.1
Fort Scott	19.1	18.7
Hutchinson	9.7	10.9
Independence	11.1	10.9
Kansas City	12.5	14.9
Lawrence	15.2	14.1
Leavenworth	17.4	17.6
Parsons	9.7	11.1
Pittsburg	11.0	9.8
Salina	12.4	11.7
Topeka	14.6	14.4
Wichita	12.4	14.5
Kentucky	10.5	11.9
Urban	15.5	16.5
Rural	9.3	10.8
Ashland	11.8	15.7
Covington	14.0	15.0
Henderson	18.1	16.3
Lexington*	22.7	23.4
Louisville	15.2	16.2
Newport	10.4	11.1
Owensboro	17.1	17.1
Paducah	20.5	17.1
Massachusetts	12.1	13.0
Urban	11.9	12.7
Rural	12.5	13.9
Adams town	8.8	8.1
Amesbury town	11.5	13.2
Arlingtown town	11.4	10.8
Attleboro	11.9	12.5
Belmont town	8.7	8.6
Beverly	10.9	12.0
Boston	14.1	14.9
Braintree town	13.4	13.1
Brockton	10.2	10.6
Brookline town	10.4	10.8
Cambridge	12.8	13.7
Chelsea	11.7	11.5
Chicopee	8.5	9.1
Clinton town	12.1	13.4
Massachusetts—Continued.		
Danvers town*	24.5	28.1
Dedham town	9.3	10.4
Easthampton town	8.0	9.6
Everett	7.5	9.0
Fall River	13.1	13.7
Fitchburg	11.8	11.1
Framingham town	14.0	14.9
Gardner town	13.3	12.7
Gloucester	13.0	12.9
Greenfield town	9.0	9.6
Haverhill	11.0	10.9
Holyoke*	13.0	13.8
Lawrence	10.7	11.7
Leominster	12.3	11.3
Lowell	13.3	14.6
Lynn	11.1	11.7
Malden	10.0	11.8
Marlborough	11.0	12.8
Medford	9.4	9.6
Melrose	11.9	12.1
Methuen	12.3	12.5
Milford town	13.9	13.4
Natick town	14.1	14.6
New Bedford	10.2	12.2
Newburyport	15.4	16.1
Newton	10.3	11.4
North Adams	12.7	12.8
Northampton*	17.3	19.5
Northbridge town	8.2	10.8
Norwood town	8.5	8.4
Peabody	11.3	10.9
Pittsfield	12.1	12.0
Plymouth town	11.9	11.7
Quincy	8.8	9.5
Revere	5.7	6.8
Salem	11.9	13.9
Saugus town	8.0	7.7
Somerville	9.7	11.2
Southbridge town	9.0	8.6
Springfield	11.4	11.9
Taunton*	15.0	17.2
Wakefield	9.7	10.9
Waltham	12.0	13.8
Watertown town	5.6	6.3
Webster town	6.6	9.4
West Springfield town	8.2	9.0
Westfield town	12.7	12.2
Weymouth town	10.2	10.5
Winchester town	10.8	11.6
Winthrop town	9.2	8.6
Woburn	11.5	11.9
Worcester	12.6	13.1

Area	Birth rate per 1,000 population	
	1924	1923
Iowa	18.6	[1]
Urban	20.3	[1]
Rural	18.0	[1]
Boone	16.9	[1]
Burlington	20.6	[1]
Cedar Rapids	17.8	[1]
Clinton	17.8	[1]
Council Bluffs	23.0	[1]
Davenport	14.3	[1]
Des Moines	20.9	[1]
Dubuque	21.8	[1]
Iowa—Continued.		
Fort Dodge	23.9	[1]
Fort Madison	18.9	[1]
Iowa City	36.7	[1]
Keokuk	23.4	[1]
Marshalltown	18.6	[1]
Mason City	21.1	[1]
Muscatine	18.0	[1]
Ottumwa	24.7	[1]
Sioux City	21.4	[1]
Waterloo	17.6	[1]

[1] Not in the registration area in 1923.

DEATHS DURING WEEK ENDED APRIL 25, 1925

Summary of information received by telegraph from industrial insurance companies for week ended April 25, 1925, and corresponding week of 1924. (From the Weekly Health Index, April 28, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended Apr. 25, 1925	Corresponding week, 1924
Policies in force	59, 553, 173	55, 772, 326
Number of death claims	12, 989	12, 005
Death claims per 1,000 policies in force, annual rate	11. 4	11. 2

Deaths from all causes in certain large cities of the United States during the week ended April 25, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, April 28, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Apr. 25, 1925: Total deaths	Week ended Apr. 25, 1925: Death rate [1]	Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year: Week ended Apr. 25, 1925	Deaths under 1 year: Corresponding week, 1924	Infant mortality rate week ended Apr. 25, 1925 [2]
Total (63 cities)	7, 597	14. 5	[3] 14. 3	903	[3] 924	
Akron	39			6	5	66
Albany [4]	39	17. 0	13. 2	3	5	67
Atlanta	80	17. 9	19. 9	8	12	
Baltimore [4]	237	15. 5	17. 9	24	32	70
Birmingham	65	16. 5	18. 4	9	9	
Boston	240	16. 0	15. 1	24	28	64
Bridgeport	32			3	1	48
Buffalo	193	18. 2	14. 5	27	33	110
Cambridge	39	18. 1	22. 8	4	4	69
Camden	52	21. 1	15. 7	9	9	148
Chicago [4]	784	13. 6	12. 7	110	94	97
Cincinnati	152	19. 4	15. 6	7	13	41
Cleveland	224	12. 5	12. 3	20	29	50
Columbus	73	13. 9	12. 2	5	8	47
Dallas	48	12. 9	16. 1	7	12	
Denver	91			8	10	
Des Moines	47	16. 4	10. 1	8	1	137
Detroit	298			70	54	119
Duluth	26	12. 3	10. 1	2	6	42
Erie	29			4	8	78
Fall River [4]	38	16. 4	9. 9	6	7	86
Flint	20			5	3	82
Fort Worth	37	12. 7	11. 6	5	2	
Grand Rapids	44	15. 2	10. 9	5	3	78
Houston	56			13	7	
Indianapolis	107	15. 5	11. 3	9	7	62
Jacksonville, Fla.	38	18. 9	16. 3	5	3	111
Jersey City	77	12. 7	14. 2	9	14	63
Kansas City, Kans.	31	13. 1	14. 1	5	6	105
Kansas City, Mo.	114	16. 2	15. 7	14	15	
Los Angeles	216			27	20	75
Louisville	81	16. 3	14. 3	8	6	70
Lowell	27	12. 1	18. 5	2	4	35
Lynn	15	7. 5	7. 5	1	4	27
Memphis	64	19. 1	20. 3	6	8	
Milwaukee	155	16. 1	10. 2	22	16	101
Minneapolis	108	13. 2	11. 7	17	11	91
Nashville [4]	54	22. 7	22. 4	5	3	
New Bedford	32	12. 3	15. 7	3	7	50
New Haven	52	15. 2	11. 0	4	6	52
New Orleans	172	21. 6	15. 5	29	14	
New York	1, 611	13. 8	13. 9	192	198	77
Bronx Borough	189	10. 9	10. 8	21	22	73
Brooklyn Borough	530	12. 4	12. 6	68	74	71
Manhattan Borough	719	16. 6	16. 2	86	82	80
Queens Borough	127	11. 5	13. 8	15	18	74
Richmond Borough	46	17. 9	16. 4	2	2	36

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 62 cities.
[4] Deaths for week ended Friday, Apr. 24, 1925.

Deaths from all causes in certain large cities of the United States during the week ended April 25, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, April 28, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Apr 25, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate week ended Apr. 25, 1925
	Total deaths	Death rate		Week ended Apr. 25, 1925	Corresponding week, 1924	
Newark, N. J	120	13.8	14.0	21	25	96
Norfolk	36	11.1	14.0	5	4	89
Oakland	51	10.5	11.4	8	14	94
Oklahoma City	20	9.8	13.0	3	2	
Omaha	78	19.2	13.5	11	5	106
Paterson	33	12.1	15.6	5	6	84
Philadelphia	487	12.8	15.4	51	66	64
Pittsburgh	206	17.0	17.7	33	14	116
Portland, Oreg	76	14.0	11.1	5	7	52
Providence	80	17.0	15.6	9	13	72
Richmond	54	15.1	15.6	10	10	121
Rochester	106	16.7		12		95
St. Louis	227	14.4	17.0	14	23	
St. Paul	77	16.3	14.5	10	12	85
Salt Lake City [4]	28	11.2	17.0	3	10	47
San Antonio	61	16.1	16.3	15	10	
San Francisco	149	13.9	15.1	7	9	40
Schenectady	25	12.8	10.4	4	4	113
Seattle	84			5	3	51
Somerville	25	12.8	13.5	2	1	54
Spokane	28			2	6	44
Springfield, Mass	38	13.0	12.3	1	3	15
Syracuse	50	13.6	11.9	14	7	176
Tacoma	29	14.5	10.1	1	4	24
Toledo	70	12.7	14.7	5	13	45
Trenton	52	20.5	17.7	7	5	114
Washington, D. C	160	16.8	15.6	21	7	118
Waterbury	22			4	4	88
Wilmington, Del	20	8.5	12.6	1	4	23
Worcester	34	8.9	16.3	3	7	35
Yonkers	19	8.9	10.5	1	1	22
Youngstown	30	9.8	13.1	7	9	89

[4] Deaths for week ended Friday, Apr. 24, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended May 2, 1925

	Cases
Cerebrospinal meningitis	2
Chicken pox	44
Diphtheria	7
Dysentery	32
Influenza	134
Lethargic encephalitis	1
Malaria	42
Measles	20
Mumps	64
Paratyphoid fever	7
Pellagra	36
Pneumonia	111
Scarlet fever	41
Smallpox	114
Tetanus	2
Tuberculosis	69
Typhoid fever	24
Whooping cough	43

ARIZONA

	Cases
Chicken pox	12
Diphtheria	5
Influenza	50
Measles	63
Mumps	21
Scarlet fever	8
Smallpox	3
Tuberculosis	29
Typhoid fever	2
Whooping cough	19

ARKANSAS

	Cases
Chicken pox	22
Diphtheria	1
Influenza	121
Malaria	65
Measles	29
Mumps	59
Pellagra	17
Scarlet fever	6
Smallpox	14
Trachoma	3
Tuberculosis	19
Typhoid fever	11
Whooping cough	20

	Cases
Diphtheria	115
Influenza	61
Leprosy—Kings County	1
Lethargic encephalitis:	
Kern County	1
Los Angeles	1
San Francisco	1
Measles	85
Poliomyelitis:	
Kings County	1
Los Angeles	1
Modesto	3
Redondo Beach	1
San Diego	3
San Francisco	2
Santa Paula	1
Rocky Mountain spotted fever—Lassen County	1
Scarlet fever	109
Smallpox:	
Corning	9
Long Beach	11
Los Angeles	42
Los Angeles County	13
Oakland	19
San Diego	24
Scattering	51
Typhoid fever	11

COLORADO

(Exclusive of Denver)

	Cases
Chicken pox	20
Diphtheria	15
Influenza	1
Measles	5
Mumps	20
Pneumonia	5
Scarlet fever	24
Septic sore throat	1
Trachoma	1
Tuberculosis	22
Typhoid fever	4
Whooping cough	8

CONNECTICUT

	Cases
Botulism	1
Cerebrospinal meningitis	1
Chicken pox	51
Diphtheria	28
German measles	28
Influenza	11
Lethargic encephalitis	1
Measles	207
Mumps	29
Pneumonia (all forms)	68
Scarlet fever	107
Septic sore throat	2
Smallpox	2
Tuberculosis (all forms)	39
Typhoid fever	6
Whooping cough	165

DELAWARE

Chicken pox	3
Diphtheria	2
Measles	9
Pneumonia	1
Mumps	5
Scarlet fever	6
Tuberculosis	1
Typhoid fever	1
Whooping cough	1

GEORGIA

Chicken pox	34
Conjunctivitis (acute)	1
Diphtheria	10
Dysentery	50
German measles	1
Hookworm disease	5
Influenza	109
Malaria	64
Measles	8
Mumps	44
Pellagra	11
Pneumonia	34
Poliomyelitis	1
Scarlet fever	2
Septic sore throat	9
Smallpox	14
Tuberculosis	9
Typhoid fever	7
Whooping cough	34

ILLINOIS

Cerebrospinal meningitis:	
Saline County	1
Will County	1
Diphtheria:	
Cook County	72
Scattering	19
Influenza	29
Lethargic encephalitis—Fulton County	1
Measles	1,505
Pneumonia	298
Poliomyelitis:	
Coles County	1
Cook County	2
Madison County	1

ILLINOIS—continued

	Cases
Scarlet fever:	
Cook County	221
Peoria County	11
Stephenson County	10
Scattering	95
Smallpox	43
Tuberculosis	229
Typhoid fever	7
Whooping cough	285

INDIANA

Anthrax—Henry County	1
Cerebrospinal meningitis	1
Chicken pox	31
Diphtheria	13
Influenza	138
Measles	103
Mumps	3
Pneumonia	10
Scarlet fever	166
Smallpox	53
Tuberculosis	40
Typhoid fever	9
Whooping cough	8

IOWA

Diphtheria	15
Scarlet fever	20
Smallpox	15

KANSAS

Chicken pox	60
Diphtheria	17
German measles	5
Influenza	6
Measles	21
Mumps	158
Pneumonia	21
Rocky Mountain spotted fever	1
Scarlet fever	73
Septic sore throat	1
Smallpox	2
Tuberculosis	26
Typhoid fever	1
Whooping cough	30

LOUISIANA

Dengue	7
Diphtheria	12
Dysentery	6
Hookworm disease	80
Influenza	97
Malaria	12
Pellagra	6
Pneumonia	69
Scarlet fever	18
Smallpox	9
Tuberculosis	47
Typhoid fever	33
Whooping cough	16

MAINE

Chicken pox	37
Diphtheria	3
German measles	1
Influenza	133

MAINE—continued

	Cases
Measles	14
Mumps	137
Pneumonia	17
Scarlet fever	22
Tuberculosis	11
Typhoid fever	3

MARYLAND [1]

Cerebrospinal meningitis	1
Chicken pox	93
Diphtheria	31
Dysentery	2
German measles	3
Influenza	49
Lethargic encephalitis	2
Malaria	2
Measles	44
Mumps	96
Ophthalmia neonatorum	2
Paratyphoid fever	1
Pneumonia (all forms)	96
Poliomyelitis	1
Scarlet fever	55
Septic sore throat	2
Smallpox	1
Tetanus	2
Tuberculosis	59
Typhoid fever	4
Vincent's angina	1
Whooping cough	108

MASSACHUSETTS

Cerebrospinal meningitis	6
Chicken pox	113
Conjunctivitis (suppurative)	10
Diphtheria	93
German measles	228
Hookworm disease	2
Influenza	20
Lethargic encephalitis	2
Malaria	2
Measles	1,079
Mumps	60
Ophthalmia neonatorum	28
Pneumonia (lobar)	197
Scarlet fever	266
Septic sore throat	5
Tetanus	1
Trachoma	2
Tuberculosis (all forms)	185
Typhoid fever	11
Whooping cough	64

MICHIGAN

Diphtheria	68
Measles	368
Pneumonia	132
Scarlet fever	323
Smallpox	15
Tuberculosis	366
Typhoid fever	11
Whooping cough	195

MINNESOTA

Chicken pox	86
Diphtheria	69
Influenza	3

[1] Week ended Friday.

MINNESOTA—continued

	Cases
Measles	17
Pneumonia	6
Scarlet fever	201
Smallpox	14
Tuberculosis	65
Typhoid fever	3
Whooping cough	18

MISSISSIPPI

Diphtheria	5
Scarlet fever	6
Smallpox	21
Typhoid fever	7

MISSOURI

(Exclusive of Kansas City)

Chicken pox	53
Diphtheria	61
Influenza	13
Measles	24
Mumps	75
Pneumonia	21
Scarlet fever	155
Smallpox	20
Trachoma	11
Tuberculosis	56
Typhoid fever	5
Whooping cough	20

MONTANA

Chicken pox	29
Diphtheria	9
German measles	44
Influenza	2
Measles	58
Mumps	47
Rocky Mountain spotted fever:	
Billings	1
Jordan	1
Miles City R. F. D	1
Stevensville	1
Scarlet fever	40
Smallpox	5
Tuberculosis	14
Typhoid fever	3
Whooping cough	7

NEW JERSEY

Anthrax	1
Cerebrospinal meningitis	1
Chicken pox	170
Diphtheria	57
Influenza	15
Measles	376
Pneumonia	139
Scarlet fever	244
Smallpox	2
Trichinosis	1
Typhoid fever	4
Whooping cough	243

NEW MEXICO

Chicken pox	5
Conjunctivitis	9
Diphtheria	2
Influenza	1
Measles	18

NEW MEXICO—continued

	Cases
Mumps	13
Pneumonia	4
Scarlet fever	5
Smallpox	4
Tuberculosis	24
Typhoid fever	2
Whooping cough	13

NEW YORK

(Exclusive of New York City)

Diphtheria	100
Influenza	84
Lethargic encephalitis	3
Measles	504
Pneumonia	292
Scarlet fever	308
Typhoid fever	14
Whooping cough	195

NORTH CAROLINA

Chicken pox	108
Diphtheria	17
German measles	7
Measles	22
Scarlet fever	27
Septic sore throat	2
Smallpox	107
Typhoid fever	6
Whooping cough	70

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Anthrax—Muskogee County	1
Cerebrospinal meningitis—Woodward County	1
Chicken pox	17
Diphtheria	4
Influenza	85
Measles	3
Mumps	23
Pneumonia	43
Scarlet fever	
Woodward County	9
Scattering	15
Smallpox	13
Typhoid fever	4
Whooping cough	33

OREGON

Cerebrospinal meningitis	[1] 3
Chicken pox	14
Diphtheria:	
Portland	19
Scattering	9
Influenza	32
Measles	2
Mumps	23
Pneumonia	[1] 11
Scarlet fever:	
Clackamas County	11
Scattering	9
Smallpox	3
Typhoid fever	5
Whooping cough	21

[1] Deaths.

SOUTH DAKOTA

	Cases
Chicken pox	4
Diphtheria	6
Pneumonia	2
Scarlet fever	24
Smallpox	11
Tuberculosis	3
Whooping cough	7

TEXAS

Chicken pox	52
Diphtheria	19
Dysentery (epidemic)	1
Influenza	18
Lethargic encephalitis	1
Malta fever	1
Measles	23
Mumps	39
Pellagra	4
Pneumonia	11
Poliomyelitis	1
Scarlet fever	16
Smallpox	24
Tuberculosis	15
Typhoid fever	12
Typhus fever	2
Whooping cough	27

VERMONT

Chicken pox	18
Diphtheria	7
Measles	5
Mumps	42
Scarlet fever	11
Whooping cough	4

VIRGINIA

Smallpox:	
Henry County	1
Fauquier County	1
Montgomery	1

WASHINGTON

Cerebrospinal meningitis—Spokane	1
Chicken pox	65
Diphtheria	29
German measles	19
Measles	4
Mumps	87
Scarlet fever	10
Smallpox	50
Tuberculosis	22
Typhoid fever	1
Whooping cough	140

WEST VIRGINIA

Diphtheria	8
Scarlet fever	20
Smallpox	16

WISCONSIN

Milwaukee:	
Chicken pox	34
Diphtheria	9
German measles	141
Measles	176
Mumps	77
Pneumonia	40

WISCONSIN—continued

	Cases
Poliomyelitis	1
Scarlet fever	19
Smallpox	30
Tuberculosis	12
Whooping cough	19
Scattering:	
Cerebrospinal meningitis	3
Chicken pox	85
Diphtheria	21
German measles	247
Influenza	331
Measles	252
Mumps	199
Pneumonia	39
Scarlet fever	94

WISCONSIN—continued

	Cases
Smallpox	22
Tuberculosis	25
Typhoid fever	6
Whooping cough	74

WYOMING

Chicken pox	4
Diphtheria	2
Measles	5
Mumps	8
Pneumonia	1
Rocky Mountain spotted fever	4
Scarlet fever	3
Whooping cough	8

Reports for Week Ended April 25, 1925

DISTRICT OF COLUMBIA

	Cases
Chicken pox	16
Diphtheria	8
Influenza	2
Measles	51
Pneumonia	37
Scarlet fever	25
Smallpox	8
Tuberculosis	49
Typhoid fever	2
Whooping cough	19

NORTH DAKOTA

	Cases
Chicken pox	8
Diphtheria	7
German measles	11
Influenza	4
Measles	7
Mumps	16
Pneumonia	8
Scarlet fever	25
Smallpox	12
Tuberculosis	1
Whooping cough	16

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
January, 1925										
New Mexico	0	24	56	0	124	0	0	41	2	12
February, 1925										
New Mexico	0	29	116	0	65	1	0	18	1	5
Tennessee	5	78	1,576	75	231	47	1	188	485	47
March, 1925										
California	8	560	723	1	387	7	11	689	653	38
Montana		45	14		139			125	36	3
New Mexico	0	40	120	0	229	1	0	44	8	3
Pennsylvania	6	998		2	5,524	1	0	3,087	30	88
South Carolina	1	254	282	6	1	4		6	54	1
Washington	3	199	0	0	39	0	1	175	198	25

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RECIPROCAL NOTIFICATIONS, MARCH, 1925

Notifications regarding communicable diseases sent during the month of March, 1925, to other State health departments by departments of health of certain States

Referred by—	Diphtheria	Leprosy	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever
Connecticut			9			
Illinois				3	12	
Massachusetts						2
Minnesota	1	1			70	1
New Jersey			1	3		
New York			1			1
Washington						1

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended April 18, 1925:

Los Angeles, Calif.

Week ended Apr. 18, 1925:
- Number of rats examined 4, 367
- Number of rats found to be plague infected 4
- Number of squirrels examined 1, 114
- Number of squirrels found to be plague infected 0

Totals, Nov. 5, 1924, to Apr. 18, 1925:
- Number of rats examined 85, 971
- Number of rats found to be plague infected 177
- Number of squirrels examined 8, 618
- Number of squirrels found to be plague infected 9

Date of discovery of last plague-infected rodent, Apr. 28, 1925.
Date of last human case, Jan. 15, 1925.

Oakland, Calif.

(Including other East Bay communities)

Week ended Apr. 18, 1925:
- Number of rats trapped 2, 637
- Number of rats found to be plague infected 0

Totals, Jan. 1 to Apr. 18, 1925:
- Number of rats trapped 37, 894
- Number of rats found to be plague infected 21

Date of discovery of last plague-infected rat, Mar. 4, 1925.
Date of last human case, Sept. 10, 1919.

New Orleans, La.

Week ended Apr. 18, 1925:
- Number of vessels inspected 372
- Number of inspections made 1, 026
- Number of vessels fumigated with cyanide gas 33
- Number of rodents examined for plague 4, 665
- Number of rodents found to be plague infected 0

Totals, Dec. 5, 1924, to Apr. 18, 1925:
- Number of rodents examined for plague 80, 238
- Number of rodents found to be plague infected 12

Date of discovery of last plague-infected rat, Jan. 17, 1925.
Date of last human case occurring in New Orleans, Aug. 20, 1920.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended April 18, 1925, 34 States reported 1,213 cases of diphtheria. For the week ended April 19, 1924, the same States reported 1,552 cases of this disease. One hundred and two cities, situated in all parts of the country and having an aggregate population of more than 28,200,000, reported 876 cases of diphtheria for the week ended April 18, 1925. Last year, for the corresponding week, they reported 984 cases. The estimated expectancy for these cities was 934 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Twenty-nine States reported 4,584 cases of measles for the week ended April 18, 1925, and 13,896 cases of this disease for the week ended April 19, 1924. One hundred and two cities reported 3,236 cases of measles for the week this year and 5,055 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 34 States—this year, 3,610 cases; last year, 3,372; 102 cities—this year, 1,882; last year, 1,588; estimated expectancy, 1,028 cases.

Smallpox.—For the week ended April 18, 1925, 34 States reported 686 cases of smallpox. Last year, for the corresponding week, they reported 1,419 cases of smallpox. One hundred and two cities reported smallpox for the week as follows: 1925, 267 cases; 1924, 465 cases; estimated expectancy, 96 cases. These cities reported 15 deaths from smallpox for the week this year.

Typhoid fever.—Two hundred and two cases of typhoid fever were reported for the week ended April 18, 1925, by 33 States. For the corresponding week of 1924 the same States reported 173 cases. One hundred and two cities reported 55 cases of typhoid fever for the week this year and 54 cases for the corresponding week last year. The estimated expectancy for these cities was 48 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 102 cities as follows: 1925, 1,173 deaths; 1924, 1,154 deaths.

City reports for week ended April 18, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	8	1	0	0	0	1	33	8
New Hampshire:									
Concord	22,408	0	0	2	0	0	0	0	0
Manchester	81,383	0	2	0	0	1	1	0	2
Vermont.									
Barre	[1] 10,008	2	0	1	0	0	2	5	0
Burlington	23,613	3	1	0	0	0	12	18	1
Massachusetts:									
Boston	770,400	--------	57	26	7	2	277	--------	34
Fall River	120,912	9	3	0	3	2	1	0	3
Springfield	144,227	4	4	2	0	0	5	3	3
Worcester	191,927	14	5	2	1	0	2	2	8
Rhode Island:									
Pawtucket	68,799	3	2	0	0	0	0	0	1
Providence	242,378	0	11	8	4	2	3	0	11
Connecticut:									
Bridgeport	[1] 143,555	0	6	6	--------	2	0	0	6
Hartford	[1] 138,036	0	7	5	--------	3	1	2	7
New Haven	172,967	9	4	0	1	0	77	1	7
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	5	11	8	5	1	208	6	17
New York	5,927,625	191	244	265	59	29	155	26	245
Rochester	317,867	0	5	9	--------	1	35	19	6
Syracuse	184,511	12	6	8	0	0	16	8	4
New Jersey:									
Camden	124,157	3	4	7	0	0	83	1	5
Newark	438,699	27	17	12	22	1	55	15	20
Trenton	127,390	2	4	0	0	0	10	0	2
Pennsylvania:									
Philadelphia	1,922,788	66	71	126	--------	8	478	34	53
Pittsburgh	613,442	27	18	11	--------	8	425	12	51
Reading	110,917	12	3	4	0	0	145	4	0
Scranton	140,636	2	3	3	0	0	0	0	13
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	8	8	8	--------	11	0	4	29
Cleveland	888,519	65	22	23	12	2	7	7	23
Columbus	261,082	3	4	2	0	0	2	2	3
Toledo	268,338	12	3	4	--------	5	96	0	9
Indiana.									
Fort Wayne	93,573	8	2	0	0	0	8	0	4
Indianapolis	342,718	13	7	0	--------	1	2	12	10
South Bend	76,709	2	1	2	0	0	1	0	1
Terre Haute	68,939	1	1	1	0	0	6	0	1
Illinois:									
Chicago	2,886,121	56	98	64	36	11	623	13	92
Cicero	55,968	--------	3	--------	--------	--------	--------	--------	--------
Springfield	61,833	8	1	0	4	2	3	41	4

[1] Population Jan. 1, 1920.

City reports for week ended April 18, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued.									
Michigan:									
Detroit	995,668	37	52	22	11	4	11	15	38
Flint	117,968	7	3	2		1	10	1	6
Grand Rapids	145,947	5	4	0	0	0	55	0	0
Wisconsin:									
Madison	42,519	5	0	0	0	0	3	33	0
Milwaukee	484,595	31	13	19	3	0	202	59	40
Racine	64,393	18	1	5	0	0	45	9	1
Superior	[1] 39,671	0	1	0	0	1	0	0	4
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	1	1	0	0	0	0	0	7
Minneapolis	409,125	67	14	21		8	17	7	13
St. Paul	241,891	6	13	6		6	9	17	15
Iowa:									
Davenport	61,262	0	1	0	0		2	0	
Sioux City	79,662	4	1	2	0		1	35	
Waterloo	39,667	16	0	0	0		1		
Missouri:									
Kansas City	351,819	14	7	8	5	5	3	13	19
St. Joseph	78,232	1	2	0		3	0	1	3
St. Louis	803,853	32	38	36	0	0	9	16	
North Dakota:									
Fargo	24,841	3	0	0	0	0	1	8	0
Grand Forks	14,547	2	0	1	0		0	0	
South Dakota:									
Aberdeen	15,829	2		0	0		0	0	
Sioux Falls	29,206	0	0	0	0	0	0	0	0
Nebraska:									
Lincoln	58,761	10	2	1	0	0	1	1	1
Omaha	204,382	0	4	2	0	0	2	0	14
Kansas:									
Topeka	52,555	3	1	2	2	1	0	62	4
Wichita	79,261	18	1	3	0	0	1	0	3
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	3	2	2	0	0	13	0	5
Maryland:									
Baltimore	773,580	73	23	35	28	0	4	42	46
Cumberland	32,361		1	0	3	0	0		2
Frederick	11,301	0	0	0	0	0	0	0	1
District of Columbia:									
Washington	[1] 437,571	22	10	5	1	2	47		19
Virginia:									
Lynchburg	30,277	4	1	0	0	0	1	25	1
Norfolk	159,089	10	1	0	0	0	4	60	4
Richmond	181,044	7	2	3	0	0	1	5	0
Roanoke	55,502	3	1	1	0	0	5	2	2
West Virginia:									
Charleston	45,597	6	0	0	0	0	31	1	2
Wheeling	[1] 56,208	4	1	0	0	1	16	0	3
North Carolina:									
Raleigh	29,171	7	0	0	0	0	0	0	2
Wilmington	35,719	3	1	0	0	0	0	1	0
Winston-Salem	56,230	15	1	0		1	4	8	3
South Carolina:									
Charleston	71,245	0	1	0	0	0	0	0	2
Columbia	39,688	1	0	0	0	0	0	3	4
Greenville	25,789	0	0	0	0	0	0	0	1
Georgia:									
Atlanta	222,963	3	2	4	8	0	0	0	13
Bruhswick	15,937		0	0	0	0	0		0
Savannah	89,448	2	0	0	4	1	0	13	1
Florida:									
St. Petersburg	24,403	0	0	0		1	0	0	1
Tampa	56,050	1	1	0	0	0	0	1	2

[1] Population Jan. 1, 1920

City reports for week ended April 18, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL									
Kentucky									
Covington	57,877	0	2	1		2	0	0	3
Lexington	43,673	1	0	0	0	0	0	0	2
Louisville	257,671	3	5	3	2	1	3	0	8
Tennessee:									
Memphis	170,067		4	1		5	1		7
Nashville	121,128	4	1	0		5	11	1	1
Alabama:									
Birmingham	195,901	13	1	2	13	1	2	6	17
Mobile	63,858	3	1	1	0	0	0	0	0
Montgomery	45,383	6	0	0	0	0	0	12	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	0	0	1	0		0	2	
Little Rock	70,916	0	0	2	5		10	0	
Louisiana:									
New Orleans	404,575	5	8	7	10		2	0	
Shreveport	54,590	5		0	0	0	0	0	6
Oklahoma:									
Tulsa	102,018		1	1	0		3		
Texas:									
Dallas	177,274		3			2			8
Galveston	46,877	2	0	0	0	0	0	2	3
Houston	154,970	3	2	2	0	0	0	1	0
San Antonio	184,727	1	2	0	0	0	1	0	2
MOUNTAIN									
Montana:									
Billings	16,927	0	0	1	0	0	2	14	1
Great Falls	27,787	1	1	4		1	14	1	0
Helena	[1] 12,037	0	0	0	0	0	0	0	0
Missoula	[1] 12,668	0	0	0	0	0	5	0	1
Idaho:									
Boise	22,806	2	0	1	0	0	1	0	0
Colorado:									
Denver	272,031	22	10	12		3	6	72	15
Pueblo	43,519	3	2	3	0	0	0	3	2
New Mexico:									
Albuquerque	16,648	1	1	0	0	0	1	0	1
Utah:									
Salt Lake City	126,241	0	3	4	0	0	0	27	2
Nevada:									
Reno	12,429	0	1	0	0	0	0	0	1
PACIFIC									
Washington:									
Seattle	[1] 315,685	43	5	8	0		1	61	
Spokane	104,573	3	2	3	0		0	0	
Tacoma	101,731	4	1	2	0		0	1	
Oregon:									
Portland	273,621	10	4	11	26	0	4	14	10
California:									
Los Angeles	666,853	50	35	24	22	2	39	20	15
Sacramento	69,950	0	1	2		1	0	1	0
San Francisco	539,038	39	24	19	8	4	13	16	9

[1] Population Jan. 1, 1920.

City reports for week ended April 18, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	2	4	0	0	0	1	1	0	0	0	24
New Hampshire:											
Concord	1	2	0	0	0	1	0	0	0	0	13
Manchester	2	6	0	0	0	0	0	0	1	0	18
Vermont:											
Barre	1	0	0	0	0	1	0	0	0	0	2
Burlington	1	0	0	0	0	0	0	0	0	1	1
Massachusetts:											
Boston	59	70	0	0	0	17	2	1	0	------	246
Fall River	4	1	0	0	0	0	1	1	0	0	43
Springfield	6	12	0	0	0	1	0	0	0	5	46
Worcester	8	11	0	0	0	4	1	1	1	4	64
Rhode Island:											
Pawtucket	1	1	0	0	0	0	0	0	0	2	24
Providence	9	12	0	0	0	5	0	0	0	1	80
Connecticut:											
Bridgeport	5	7	0	0	0	1	0	0	0	0	34
Hartford	4	4	0	0	0	2	0	0	0	10	58
New Haven	8	17	0	0	0	1	0	0	0	19	42
MIDDLE ATLANTIC											
New York:											
Buffalo	19	20	0	0	0	15	1	0	0	11	162
New York	218	300	0	0	0	[1] 101	10	16	2	112	1,628
Rochester	14	50	0	0	0	6	1	0	0	8	84
Syracuse	13	4	0	0	0	4	0	1	0	0	47
New Jersey:											
Camden	3	22	0	11	4	1	0	0	0	3	48
Newark	24	35	0	2	0	9	1	0	0	64	125
Trenton	3	2	0	0	0	5	0	1	0	4	33
Pennsylvania:											
Philadelphia	71	170	0	22	3	48	3	4	1	94	553
Pittsburgh	18	67	1	0	0	12	1	0	0	6	204
Reading	4	7	0	0	0	1	0	0	0	11	28
Scranton	2	1	0	0	0	2	0	0	0	3	--------
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	11	29	2	1	0	9	1	0	0	5	135
Cleveland	24	33	1	0	0	18	1	1	0	40	198
Columbus	6	17	1	6	0	5	0	0	0	10	64
Toledo	15	17	3	0	0	5	0	0	0	28	80
Indiana:											
Fort Wayne	2	17	2	1	0	4	0	0	0	1	41
Indianapolis	13	10	3	8	0	6	0	0	0	14	98
South Bend	3	4	0	0	0	0	0	0	0	2	13
Terre Haute	2	4	1	1	0	2	0	0	0	1	22
Illinois:											
Chicago	77	228	2	0	0	55	2	3	0	98	745
Cicero	1	------	0	------	------	------	0	------	------	------	------
Springfield	1	0	1	0	0	0	0	0	0	0	20
Michigan:											
Detroit	77	112	5	0	0	25	3	2	0	79	273
Flint	6	3	1	2	0	1	0	0	0	7	29
Grand Rapids	7	47	1	3	0	1	0	0	0	4	34
Wisconsin:											
Madison	3	7	1	1	0	0	0	0	0	4	5
Milwaukee	30	22	1	10	3	11	1	0	0	17	166
Racine	4	3	1	3	0	0	0	0	0	1	14
Superior	2	4	2	0	0	1	0	0	0	0	13
WEST NORTH CENTRAL											
Minnesota:											
Duluth	4	20	2	0	0	1	0	0	0	3	26
Minneapolis	26	73	8	12	3	5	0	0	0	4	121
St. Paul	21	36	6	2	0	2	0	0	0	4	76

[1] Pulmonary tuberculosis only.

City reports for week ended April 18, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL—con.											
Iowa:											
Davenport	2	1	4	1	------	------	0	0	------	2	------
Sioux City	2	2	1	0	------	------	0	0	------	0	------
Waterloo	2	0	0	1	------	------	1	0	------	------	------
Missouri:											
Kansas City	11	75	3	1	0	7	1	1	0	6	81
St. Joseph	2	3	0	0	0	2	0	0	0	0	32
St. Louis	34	98	2	6	0	9	1	0	0	12	222
North Dakota:											
Fargo	1	0	1	0	0	0	0	0	0	8	7
Grand Forks	0	0	0	0	------	------	0	0	------	0	------
South Dakota:											
Aberdeen	------	2	------	0	------	------	------	0	------	1	------
Sioux Falls	2	1	1	0	0	0	0	0	0	0	15
Nebraska:											
Lincoln	3	3	0	2	0	0	0	0	0	6	14
Omaha	4	3	2	19	0	4	0	0	0	3	66
Kansas:											
Topeka	3	1	2	0	0	3	0	0	0	1	13
Wichita	3	2	4	0	0	2	0	0	0	15	24
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	1	0	0	0	1	0	0	0	2	30
Maryland:											
Baltimore	31	35	1	1	0	13	2	0	0	53	246
Cumberland	1	0	0	0	0	2	0	0	0	------	20
Frederick	2	2	0	0	0	0	0	0	0	0	4
District of Columbia:											
Washington	19	30	1	6	2	17	1	0	0	8	159
Virginia:											
Lynchburg	0	0	0	0	0	1	0	0	0	5	6
Norfolk	1	0	0	0	0	0	0	0	0	20	------
Richmond	2	1	0	0	0	7	0	0	0	1	59
Roanoke	1	2	1	0	0	0	0	0	0	0	18
West Virginia:											
Charleston	1	0	0	0	0	2	0	0	0	2	12
Wheeling	2	4	0	0	0	1	1	2	0	1	24
North Carolina:											
Raleigh	0	1	0	8	0	0	0	0	0	0	11
Wilmington	0	0	0	0	0	1	0	0	0	1	11
Winston-Salem	1	1	2	7	0	1	0	0	0	5	23
South Carolina:											
Charleston	0	1	0	0	0	3	0	0	0	1	36
Columbia	0	0	0	0	0	1	0	1	0	6	20
Greenville	0	0	0	3	0	1	0	0	0	4	9
Georgia:											
Atlanta	3	4	4	1	0	5	0	0	1	4	82
Brunswick	0	0	0	0	0	1	0	1	0	------	3
Savannah	1	0	0	0	0	1	0	0	0	5	24
Florida:											
St Petersburg	3	0	1	0	0	0	0	0	0	0	12
Tampa	0	0	0	0	0	0	0	2	1	0	24
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	2	1	0	0	5	1	0	0	0	19
Lexington	1	2	0	1	0	2	0	0	0	0	16
Louisville	4	15	0	2	0	5	1	1	0	9	86
Tennessee:											
Memphis	4	7	2	6	0	10	0	1	0	------	68
Nashville	2	5	1	10	0	5	1	2	0	0	37
Alabama:											
Birmingham	1	11	0	51	0	6	1	0	0	1	70
Mobile	0	0	1	0	0	0	0	1	0	0	9
Montgomery	0	0	1	0	0	0	0	1	0	0	9

City reports for week ended April 18, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	2	0	0	--------	--------	0	0	--------	1	--------
Little Rock	1	2	0	0	--------	--------	1	0	--------	0	--------
Louisiana:											
New Orleans	3	6	4	0	--------	--------	2	4	--------	19	--------
Shreveport	--------	0	--------	0	0	1	--------	0	0	0	35
Oklahoma:											
Tulsa	1	2	2	0	--------	--------	0	1	--------	--------	--------
Texas:											
Dallas	2	--------	2	--------	0	3	1	--------	0	--------	54
Galveston	0	1	0	1	0	1	0	0	0	0	14
Houston	1	0	0	2	0	1	0	3	1	2	43
San Antonio	1	0	0	0	0	12	0	0	0	0	63
MOUNTAIN											
Montana:											
Billings	0	4	0	0	0	0	0	0	0	0	9
Great Falls	1	10	0	0	0	0	0	0	0	0	6
Helena	1	0	1	0	0	0	0	0	0	0	3
Missoula	0	1	1	0	0	0	0	0	0	4	10
Idaho:											
Boise	1	0	0	0	0	0	0	0	0	0	5
Colorado:											
Denver	10	11	3	0	0	16	1	1	0	7	90
Pueblo	1	2	0	0	0	1	1	1	0	0	10
New Mexico:											
Albuquerque	0	0	0	0	0	5	0	0	0	0	10
Utah:											
Salt Lake City	3	5	1	0	0	2	0	2	0	4	34
Nevada:											
Reno	0	0	1	1	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle	8	5	2	13	--------	--------	1	0	--------	91	--------
Spokane	4	2	8	0	--------	--------	0	0	--------	22	--------
Tacoma	2	0	1	1	--------	--------	0	0	--------	3	--------
Oregon:											
Portland	7	13	5	0	0	4	1	1	0	12	--------
California:											
Los Angeles	15	29	2	34	0	16	1	2	0	61	223
Sacramento	1	0	0	2	0	6	0	0	0	0	24
San Francisco	16	14	2	6	0	10	2	2	1	66	171

City reports for week ended April 18, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	4	2	0	0	0	0	0	1	0
Fall River	0	0	1	0	0	0	0	0	0
Worcester	0	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	1	2	9	6	0	0	1	0	0
Pennsylvania:									
Philadelphia	0	1	2	0	0	0	1	0	0
Pittsburgh	0	0	0	0	0	0	0	0	1
EAST NORTH CENTRAL									
Illinois:									
Chicago	0	0	1	0	0	1	1	0	0
Michigan:									
Detroit	0	0	1	0	0	0	0	1	0
Wisconsin:									
Milwaukee	0	0	0	0	0	0	0	0	1
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	0	0	1	1	0	0	0	--------	0
Missouri:									
St. Louis	0	0	0	0	0	0	0	0	1
MIDDLE ATLANTIC									
Maryland:									
Baltimore	0	0	0	0	0	0	0	1	1
District of Columbia:									
Washington	0	0	0	0	0	0	0	0	1
North Carolina:									
Raleigh	0	0	0	0	0	1	0	0	0
South Carolina:									
Charleston	0	0	0	0	0	1	0	0	0
Georgia:									
Savannah	0	0	0	0	1	0	0	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Louisville	0	1	0	0	0	0	0	0	0
Alabama:									
Mobile	0	0	0	0	2	0	0	0	0
Montgomery	0	0	0	0	1	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	0	0	0	0	4	--------	0	0	0
Shreveport	0	0	0	0	0	1	0	0	0
Texas:									
Galveston	0	0	0	0	0	0	0	0	1
PACIFIC									
Washington:									
Spokane	3	--------	0	--------	0	--------	0	0	--------
Oregon:									
Portland	3	0	0	0	0	0	0	0	0
California:									
Los Angeles	2	0	0	1	0	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended April 18, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below:

Summary of weekly reports from cities, February 8 to April 18, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18
105 cities	[2] 168	149	[3] 169	162	167	167	[4] 168	177	[5] 158	[6] 161
New England	246	241	[3] 189	233	176	147	119	171	166	129
Middle Atlantic	165	163	178	167	214	196	231	241	220	228
East North Central	132	123	119	114	128	134	112	93	[5] 97	[5] 111
West North Central	259	209	209	282	201	199	247	220	226	168
South Atlantic	[2] 183	156	114	104	91	136	95	81	73	102
East South Central	69	80	51	63	40	69	57	23	34	46
West South Central	162	125	162	144	158	97	121	83	107	[7] 66
Mountain	95	162	153	86	105	143	134	124	105	239
Pacific	180	165	258	235	197	249	[4] 179	374	171	168
MEASLES CASE RATES										
105 cities	[2] 297	383	[3] 358	418	449	506	[4] 507	558	[5] 530	[6] 589
New England	661	720	[3] 585	656	542	725	755	957	1,011	917
Middle Atlantic	287	373	343	428	518	598	633	734	680	815
East North Central	515	688	632	789	740	775	798	736	[5] 706	[5] 731
West North Central	31	27	73	68	75	93	89	77	58	91
South Atlantic	[2] 98	110	81	100	146	189	136	209	207	256
East South Central	74	51	46	86	11	69	34	69	34	97
West South Central	51	14	51	23	88	42	9	88	51	[7] 72
Mountain	153	620	916	29	763	573	38	219	57	267
Pacific	29	64	61	107	110	189	[4] 151	209	241	154
SCARLET FEVER CASE RATES										
105 cities	[2] 400	390	[3] 408	395	432	427	[4] 419	409	[5] 366	[6] 343
New England	564	606	[3] 558	584	534	544	604	534	529	350
Middle Atlantic	407	376	412	372	439	417	405	436	359	343
East North Central	397	432	434	433	497	498	483	442	[5] 419	[5] 404
West North Central	728	742	734	775	719	792	755	736	647	651
South Atlantic	[2] 277	167	203	171	219	146	167	175	152	[illegible]
East South Central	212	223	183	194	355	286	286	263	280	[illegible]
West South Central	121	125	144	185	107	134	102	51	88	[7] 41
Mountain	382	248	315	286	200	429	248	277	258	318
Pacific	177	180	223	218	229	218	[4] 222	191	174	145

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Hartford, Conn., not included.
[4] Spokane, Wash., not included.
[5] Cicero, Ill., not included.
[6] Cicero, Ill., and Dallas, Tex., not included.
[7] Dallas, Tex., not included.

Summary of weekly reports from cities, February 8 to April 18, 1925—Annual rates per 100,000 population—Continued

SMALLPOX CASE RATES

	Week ended—									
	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18
105 cities	[2] 79	66	[3] 66	62	61	63	[4] 58	57	[5] 51	[6] 49
New England	0	0	[3] 0	0	0	0	0	12	2	0
Middle Atlantic	4	2	3	1	5	8	7	21	10	18
East North Central	35	56	28	42	39	32	33	24	[5] 22	[5] 27
West North Central	193	126	120	114	124	102	135	87	97	85
South Atlantic	[2] 98	67	43	51	59	57	67	49	43	53
East South Central	675	532	583	652	446	646	423	42	572	395
West South Central	139	83	116	74	74	107	107	46	51	[7] 17
Mountain	162	86	57	48	95	67	19	19	19	10
Pacific	220	215	313	206	247	212	[4] 191	255	148	162

TYPHOID FEVER CASE RATES

	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18
105 cities	[2] 13	11	[3] 14	11	10	12	[4] 11	9	[5] 10	[6] 11
New England	20	0	[3] 13	7	5	30	12	5	2	7
Middle Atlantic	6	10	8	10	5	8	7	4	9	11
East North Central	6	6	7	11	4	7	3	4	[5] 6	[5] 5
West North Central	10	4	17	6	10	8	6	2	2	2
South Atlantic	[2] 34	8	20	8	24	22	12	30	20	12
East South Central	40	34	34	34	34	46	57	17	17	34
West South Central	46	42	42	28	28	23	42	32	37	[7] 39
Mountain	19	38	76	10	19	0	0	0	19	38
Pacific	12	23	9	15	15	0	[4] 28	20	9	12

INFLUENZA DEATH RATES

	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18
105 cities	[2] 28	30	[3] 34	30	34	42	33	34	[5] 27	[8] 28
New England	27	17	[3] 40	17	35	30	30	35	32	27
Middle Atlantic	22	21	20	15	24	29	22	21	16	24
East North Central	17	18	24	27	33	49	40	38	[5] 27	[5] 25
West North Central	11	22	37	35	33	42	46	39	37	50
South Atlantic	[2] 55	55	49	53	33	53	12	28	26	12
East South Central	63	74	126	103	91	120	86	69	74	80
West South Central	122	153	148	143	107	76	36	36	46	[9] 17
Mountain	57	57	19	19	48	48	38	181	86	38
Pacific	4	12	29	29	16	12	53	29	12	29

PNEUMONIA DEATH RATES

	Feb. 14	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18
105 Cities	[2] 222	216	[3] 201	205	222	217	206	204	[5] 202	[8] 195
New England	239	241	[3] 242	226	229	211	219	251	211	206
Middle Atlantic	231	216	185	210	214	217	199	215	190	204
East North Central	168	184	171	195	241	222	214	182	[5] 191	[5] 191
West North Central	131	131	166	140	175	173	166	193	228	171
South Atlantic	[2] 270	252	305	268	246	290	252	234	238	232
East South Central	320	320	292	269	366	286	269	269	343	206
West South Central	464	408	260	229	178	178	168	168	168	[9] 160
Mountain	277	219	267	162	210	172	200	162	267	210
Pacific	192	213	163	139	155	131	159	159	119	98

[2] Wilmington, Del., not included. Report not received at time of going to press.
[3] Hartford, Conn., not included.
[4] Spokane, Wash., not included.
[5] Cicero, Ill., not included.
[6] Cicero, Ill., and Dallas, Tex., not included.
[7] Dallas, Tex., not included.
[8] Cicero, Ill., and New Orleans, La., not included.
[9] New Orleans, La., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

BRAZIL

Mortality—Plague—Santos—1924.—During the year 1924, there were reported at Santos, Brazil, 2,368 deaths from all causes. Causes of deaths were stated as follows:

Disease	Deaths	Disease	Deaths
Cerebrospinal meningitis	8	Plague	2
Diphtheria	3	Smallpox	1
Dysentery	55	Syphilis	31
Influenza	54	Tuberculosis (pulmonary)	271
Lethargic encephalitis	2	Typhoid fever	2
Malaria	98	Whooping cough	38
Measles	28		

EGYPT

Plague—Province of Minieh—Suez—April 1-2, 1925.—Plague has been reported in Egypt as follows: April 1, 1925—in the province of Minieh, one case; at Suez, April 2, 1925—one case with one death. The total number of cases of plague reported in Egypt from January 1 to April 2, 1925, is 17, with 9 deaths.

MADAGASCAR

Plague—February 16-28, 1925.—During the period February 16 to 28, 1925, 133 cases of plague, with 104 deaths, were reported in the Island of Madagascar. The types of the disease were stated to have been bubonic, pneumonic, and septicemic, viz, bubonic, 86 cases, 61 deaths; pneumonic, 10 cases, 6 deaths; septicemic, 37 cases, 37 deaths. For distribution according to locality, see page 973.

MEXICO

Epidemic cerebrospinal meningitis—State of Morelos, Mexico—April 1-18, 1925.—During the period April 1 to 18, 1925, cerebrospinal meningitis was reported present in epidemic form in the State of Morelos, Mexico, with 53 cases occurring in seven localities. The greatest number of cases (8) was reported on April 13.

POLAND

Typhus fever—January 4-February 7, 1925.—During the period January 4 to February 7, 1925, 581 cases of typhus fever with 49 deaths were reported in Poland.

SAMOA

Leprosy—Apia.—Under date of March 21, 1925, two new cases of leprosy were reported present at Apia, western Samoa.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended May 8, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India:				
Calcutta	Mar. 8-14	18	14	
Rangoon	Mar. 1-14	2	1	
Siam:				
Bangkok	do	2	1	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Brazil:				
Bahia	Mar. 15-21	1		
Santos				Year, 1924. Cases, 2; bubonic.
Ceylon:				
Colombo	Mar. 8-21	5	3	
Egypt				Mar. 26-Apr. 1, 1925: One case. Total, Jan. 1-Apr. 1, 1925: Cases, 17; deaths, 9. Corresponding period, 1924. Cases, 50.
City—				
Suez	Apr. 2	1	1	Date of last case: Apr. 2.
Province—				
Beni-Souef	Jan. 18	1	1	Date of last case: Jan. 18.
Dakhalia	Jan. 7	1	1	Date of last case: Jan. 7.
Girgeh	Jan. 9	1	1	Date of last case: Jan. 9.
Kalioubiah	Jan. 5-22	5	2	Date of last case: Jan. 22.
Menoufieh	Jan. 1	7	3	Date of last case: Jan. 3.
Minieh	Apr. 1	1		Date of last case: Apr. 1.
India:				
Bombay	Mar. 1-14	20	16	
Rangoon	do	42	40	
Java:				
East Java—				
Soerabaya	Feb. 22-28	1	1	
West Java—				
Cheribon	Feb. 5-11		13	
Pekalongan	do		36	
Tegal	do		7	
Madagascar				Feb. 16-28, 1925. Cases, 133; deaths, 104. Bubonic, pneumonic, septicemic.
Itasy (Province)	Feb. 16-28	2	2	Septicemic.
Moramanga (Province)	do	1	1	Bubonic.
Tananarive (Province)	do	130	101	
Tananarive (town)	do	1	1	Interior. Bubonic.
Other localities	do	129	100	
Siam:				
Bangkok	Mar. 1-7	1	1	
Straits Settlements:				
Singapore	Mar. 8-14	3	5	
Union of South Africa				Mar. 8-14, 1925: Cases, 3; deaths, 2. Native.
Bethlehem District	Mar. 8-14	1	1	
Boshof District	do	1	1	
Kroonstad District	do	1		

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended May 8, 1925—Continued

SMALLPOX

Place	Date	Cases	Deaths	Remarks
British South Africa:				
Southern Rhodesia	Mar. 12-18	1		
Canada:				
British Columbia—				
Vancouver	Apr. 6-12	3		
Victoria	Apr. 12-18	3		
Ceylon:				
Colombo	Mar. 8-21	10		Port cases.
China:				
Amoy	Mar. 8-28		7	Stated prevalent in surrounding districts.
Antung	Mar. 9-29	5		
Foochow	Mar. 1-21			Present.
Honkong	Mar. 8-14	5	1	
Nanking	Mar. 8-28			Do.
Cuba:				
Santiago	Apr. 12-18	3	1	
Haiti:				
Cape Haitien	Mar. 22-Apr. 2	6		
India:				
Bombay	Mar. 1-14	124	55	
Calcutta	Mar. 8-14	461	323	
Karachi	Mar. 22-28	13	5	
Madras	do	99	43	
Rangoon	Mar. 1-14	271	76	
Indo-China:				
Saigon	do	14	3	Including 100 square kilometers of surrounding country.
Japan:				
Nagasaki	Mar. 20-Apr. 5	2		
Java:				
East Java—				
Soerabaya	Feb. 12-25	118	22	
Mexico:				
Mexico City	Mar. 29-Apr 11	10		Including municipalities in Federal District.
Salina Cruz	Mar. 1-31	5	1	
Poland				Jan 4-Feb. 7, 1925: Cases, 13; deaths, 1.
Portugal:				
Lisbon	Mar. 16-Apr. 5		7	
Siam:				
Bangkok	Mar. 1-14	10	3	
Sierra Leone:				
Kaiyima	Mar. 9 15	1		
Spain:				
Malaga	Apr. 5-11		4	
Straits Settlements:				
Singapore	Mar. 8-14	1	1	
Tunis:				
Tunis	Apr. 9-15	11	16	
Turkey:				
Constantinople	Mar. 16-22	2		
Yugoslavia:				
Belgrade	Mar. 1-Apr. 7	6		

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Mar. 11-20	1		
Chile.				
Iquique	Mar. 22-28		1	
Valparaiso	Feb. 22-Mar. 28		7	
China:				
Antung	Mar. 16-22	1		
Greece:				
Athens	Feb. 1-Mar. 10		3	
Mexico:				
Mexico City	Mar. 29-Apr. 11	11		Including municipalities in Federal District.
Palestine:				
Petach-Tikvah	Mar. 24-30	1		
Ramleh	Mar. 17-23	1		
Poland				Jan. 4-Feb. 7, 1925: Cases, 581; deaths, 49.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended May 8, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Tunis:				
Tunis	Apr. 9-15	15	3	
Union of South Africa				Feb 1-28, 1925: Cases, 65; deaths, 5 (native). White: Cases, 10. Total, cases, 75, deaths, 5.
Cape Province				Feb 1-28, 1925 Cases, 33; deaths, 3 Native
Natal				Feb 1-28, 1925. Cases, 15; deaths, 1 Native
Orange Free State				Feb. 1-28, 1925: Cases, 16, deaths, 1 Native
Transvaal				Feb. 1-28, 1925. Cases, 1. Native.
Do				Mar. 8-14, 1925: Outbreaks.

Reports Received from December 27, 1924, to May 1, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Dec. 27, 1924: Cases, 14; deaths, 13. Dec 28, 1924-Jan. 24, 1925 Cases, 24; deaths, 17
Colombo	Nov. 16-22	1		
Do.	Jan. 11-24	2	2	
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 27,164, deaths, 16,228. Jan 4-Feb. 21, 1925: Cases, 15,894, deaths, 9,381.
Bombay	Nov 23-Dec 20	4	4	
Do	Jan 18-24.	1	1	
Calcutta	Oct. 26-Jan. 3	59	51	
Do	Jan. 4-Mar. 7	162	134	
Madras	Nov 16-Jan 3	69	40	
Do	Jan 4-Mar 7	137	98	
Rangoon	Nov. 9-Dec 20	9	2	
Do	Jan 4-Feb. 28	11	8	
Indo-China				Aug. 1-Sept 30, 1924; Cases, 14; deaths, 10 Dec. 1-31, 1924: Cases, 5, deaths, 2.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug 1-Sept 30	6	5	
Do	Dec. 1-31	1		
Cochin-China	Aug. 1-Dec. 31	10	5	
Saigon	Nov. 30-Dec. 6	1		
Tonkin	Dec 1-31	1	1	
Siam:				
Bangkok	Nov. 9-29	4	2	
Do	Jan. 18-Feb. 21	6	3	

PLAGUE

Azores:				
Fayal Island—				
Castelo Branco	Nov 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov 2-Jan. 3	30	13	
Do	Jan. 18-24	3	1	
Brazil.				
Bahia	Jan. 4 Mar. 14	5	4	
British East Africa:				
Tanganyika Territory	Nov. 23-Dec. 27	17	10	
Do	Jan. 18-24	17	11	
Uganda	Aug-Dec, 1924	279	243	
Canary Islands:				
Las Palmas	Jan. 21-23	2		Stated to be endemic
Do	Feb. 4	1		Stated to have been infected with plague Sept. 30. 1924.
Do	Mar. 26	1	1	
Realejo Alto	Dec 19	3	1	Vicinity of Santa Cruz de Teneriffe.
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 1, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-Jan. 3	12	9	
Do	Jan. 4-Mar. 7	9	12	5 plague rodents.
China:				
Foochow	Dec. 28-Jan. 3			Present.
Nanking	Nov. 23-Mar. 7			Do.
Shing Hsien	October, 1924		790	
Ecuador:				
Chimborazo Province—				
Alausi District	Jan. 14		14	At 2 localities on Guayaquil & Quito Ry.
Guayaquil	Nov. 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92
Do	Jan. 1-Mar. 15	59	25	Rats taken, 45,027; rats found infected, 234.
Naranjito	Feb. 16-Mar. 15	1		
Yaguachi	Feb. 1-Mar. 15	2	1	
Egypt				Year 1924: Cases, 373. Jan. 1-28, 1925: Cases, 15.
City—				
Alexandria	Year 1924	2	2	Last case, Nov. 26.
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec. 7.
Suez	do	20	13	Last case, Dec. 20.
Province—				
Dakhalia	Jan. 1-8	1	1	
Kalioubiah	do	3		
Menoufieh	do	7	3	
Gold Coast				September-December, 1924: Deaths, 52
Hawaii:				
Honokaa	Nov. 4	1		Plague-infected rodents found, Dec. 9, 1924, and Jan. 15, 1925.
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 28,154, deaths, 21,505. Jan. 4-Feb. 21, 1925. Cases, 28,880; deaths, 24,022
Bombay	Nov. 22-Jan. 3	4	3	
Do	Jan. 4-17	2	2	
Do	Feb. 8-28	6	6	
Calcutta	Jan. 18-24	1	1	
Karachi	Nov. 30-Dec. 6	2	1	
Do	Jan. 4-Feb. 21	12	11	
Madras Presidency	Nov. 23-Jan. 3	685	487	
Do	Jan. 4-24	658	511	
Rangoon	Oct. 26-Jan. 3	26	25	
Do	Jan. 4-Feb. 28	79	69	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 25; deaths, 20. Dec. 1-31, 1924: Cases, 11; deaths, 11. Corresponding month, 1923: Cases, 15; deaths, 5.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Do	Dec. 1-31	5	5	
Cambodia	Aug. 1-Sept. 30	18	15	
Do	Dec. 1-31	6	6	
Cochin-China	do	3	1	
Saigon	Dec. 25-31	1	1	Including 100 square kilometers of surrounding territory.
Do	Jan. 11-17	2	1	Do.
Iraq	June 29-Jan. 3	20	14	
Japan	Aug. 10-Dec. 6	19		
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri; epidemic.
Pare	Nov. 29			Do.
Samarang	Mar. 22-28	2	2	
Sidoardja	Jan. 2			Declared epidemic, Province of Soerabaya.
Soerabaya	Nov. 16-Dec. 31	71	72	
Do	Jan. 15-Feb. 18	5	4	March 29-Apr. 4, 1925. Two plague rats found.
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov. 18-Dec. 22		80	
Do	Jan. 1-14		44	Cheribon Province.
Do	Jan. 30			Present.
Pasoeroean	Dec. 27			Province. Epidemic in one locality.
Pekalongan	Oct. 14-Nov. 3		29	
Do	Nov. 18-Dec. 31		177	Pekalongan Province.
Do	Jan. 1-14		81	
Probalingga	Dec. 27			Province. Epidemic.
Tegal	Oct. 14-Dec. 31		26	
Do	Jan. 1-14		37	Pekalongan Province.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 1, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Madagascar:				
Fort Dauphin (port)	Nov 1-Dec. 15	12	5	
Do	Feb. 1-15	1	1	Bubonic
Itasy Province				Nov. 1-Dec. 15, 1924: Cases, 4; deaths, 2.
Do	Feb. 1-15	1	1	Bubonic.
Majunga (port)	Nov. 1-30	1	1	
Moramanga Province				Nov 1-Dec. 15, 1924: Cases, 49; deaths, 34. Jan. 16-Feb. 15, 1925: Cases, 5; deaths, 5.
Tamatave (port)	Nov 1-30	1	1	
Tananarive Province				Oct. 16-Dec. 31, 1924: Cases, 298; deaths, 274.
Do				Jan 1-Feb 15: Cases, 227; deaths, 194. Bubonic, pneumonic, septicemic.
Tananarive (town)	Oct 16-Nov. 30	8	7	
Do	Dec. 16-31	4	4	
Do	Jan. 1-Feb 15	3	3	Septicemic
Mauritius Island				Year 1924 Cases, 161; deaths, 144.
District—				
Flacq	Dec 1-31	5	4	
Pamplemousses	do	1	1	
Plaines Wilhems	January-December, 1924.	54	47	Not present March, April, May.
Port Louis	February-December, 1924	101	92	
Mexico:				
Tampico	Apr 6, 1925			Plague rat found in vicinity of Government wharves.
Morocco				
Marrakech				Feb 9, 1925 Present in native quarter of town. Stated to be pneumonic in form and of high mortality
Nigeria				August-November, 1924 Cases, 387; deaths, 317.
Palestine				
Jerusalem	Mar 3-9	1		
Peru				
Callao	February, 1925	6	6	
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan 25-Feb. 14	2	1	
Siberia				
Transbaikalia—				
Turga	October, 1924.		3	On Chita Railroad.
Straits Settlements.				
Singapore	Nov. 9-15	1	1	
Do	Jan 4-Mar 7	15	10	
Do	Mar. 28-Apr 4	4		One plague rat.
Syria:				
Beirut	Jan. 11-20	1		
Turkey				
Constantinople	Jan. 9 15	5	5	
Union of South Africa	Nov 22-Jan 3	28	15	In Cape Province, Orange Free State and Transvaal.
Do	Jan 4-Mar. 7	45	17	Do
On vessels:				
S. S. Conde				At Marseille, France, Nov. 8, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madgaascar, from Djibuti, Red Sea port.

SMALLPOX

Algeria				July 1-Dec. 31, 1924: Cases, 409.
Algiers	Jan. 1-Feb. 28	6		Jan. 1-20, 1925: Cases, 107.
Arabia:				
Aden	Jan 25-Mar 21	12	1	Imported.
Belgium	Jan. 1-Feb. 10	4		
Bolivia:				
La Paz	Nov. 1-Dec. 31	20	11	
Do	Jan. 1-Feb. 28	5	7	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 1, 1925—Continued

SMALLPOX—Continued.

Place	Date	Cases	Deaths	Remarks
Brazil:				
Pernambuco	Nov. 9-Jan. 3	100	27	
Do	Jan. 4-Feb. 28	95	42	
British East Africa:				
Kenya—				
Mombasa	Jan. 18-Feb. 28	66	14	
Uganda—				
Entebbe	Oct. 1-31	4		
Tanganyika Territory	Feb. 15-21	1		
British South Africa:				
Northern Rhodesia	Oct 28-Dec. 15	57	2	
Do	Jan. 27-Feb. 2	3		Natives.
Southern Rhodesia	Jan. 29-Mar. 11	2	1	
Bulgaria:				
Sofia	Mar. 12-18	1		Varioloid.
Canada:				
Alberta—				
Calgary	Mar. 15-21	1		
British Columbia—				
Ocean Falls	Mar. 7-27	6		Very mild.
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-Apr. 5	302		
Victoria	Jan. 18-Apr. 14	7		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-Feb. 27	30		
Do	Apr. 5-11	1		
New Brunswick—				
Bonaventure and Gaspe Counties.	Jan. 1-31	1		
Northumberland	Feb 8-14	1		County.
Ontario				Nov. 30-Dec 27, 1924: Cases, 33. Dec 28, 1924, to Mar. 28, 1925: Cases, 57; deaths, 1
Hamilton	Jan. 24-30	1		
Ottawa	Mar 29-Apr. 4	1		
Ceylon				July 27-Nov. 29, 1924: Cases, 27; deaths, 1.
Colombo	Jan. 18-Feb. 7	4		
China:				
Amoy	Nov. 9-Feb. 14			Present. Feb. 22-Mar. 7, 1925. Deaths, 4.
Antung	Nov. 17 Dec. 28	5		
Do	Jan. 5-Feb. 14	15	1	
Do	Mar. 2-8	3		
Foochow	Nov. 2-Feb 28			Present.
Hongkong	Nov 9-Jan. 3	6	2	
Do	Jan. 4-Feb. 7	9	7	
Do	Feb. 15-Mar. 7	5	5	
Do	Mar. 22-Apr. 4	9	4	
Manchuria—				
Dairen	Jan. 19-Feb. 1	2		
Harbin	Jan. 15-Feb. 11	5		
Nanking	Jan. 4—Mar. 7			Do.
Shanghai	Dec. 7-27	1	2	
Do	Jan. 18-Mar. 7		8	
Chosen:				
Seoul	Dec. 1-31	1		
Colombia.				
Buenaventura	Feb. 15-28	2		
Santa Marta	Mar. 15-28			Present in mild form in localities in vicinity
Czechoslovakia				April-June, 1924: Cases, 1; occurring in Province of Moravia.
Dominican Republic:				
Puerta Plata	Mar. 8-21	3		
Dutch Guiana:				
Paramaribo	Apr. 20	1		
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 31	10		
Do	Jan. 8-28	8		
Do	Feb. 26-Mar. 4	1		
Esthonia				Dec. 1-31, 1924: Cases, 2.
France				July-December, 1924: Cases, 81.
Do	January, 1925	10		
Dunkirk	Mar 2-8	1		From vessel. In quarantine.
St. Malo	Feb. 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 1, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Germany				June 29-Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1-10	1		
Gibraltar	Dec. 8-14	1		
Gold Coast				July-December, 1924: Cases, 106; deaths, 1.
Great Britain.				
England and Wales	Nov. 23-Jan. 3	472		
Do	Jan. 4-Mar. 21	1,477		
Newcastle-on-Tyne	Jan. 18-Feb 21	9		
Do	Mar. 1-7	1		
Greece				January-June, 1924: Cases, 170; deaths, 27.
Do				July-December, 1924: Cases, 38; deaths, 26.
Saloniki	Nov. 11-Dec. 22	3		
India				Oct. 19, 1924, to Jan. 3, 1925; Cases, 12,564; deaths, 2,857. Jan. 4-Feb. 21, 1925: Cases, 22,834, deaths, 5,019.
Bombay	Nov. 2-Jan. 3	30	18	
Do	Jan 4-Feb. 28	265	135	
Calcutta	Oct. 26-Jan. 8	307	170	
Do	Jan. 4-Mar. 7	1,627	1,101	
Karachi	Nov. 16-Jan. 3	16	2	
Do	Jan. 4-Feb. 14	52	6	
Do	Feb. 22-Mar. 21	46	12	
Madras	Nov. 16-Jan. 3	122	48	
Do	Jan 4-Mar. 7	552	212	
Do	Mar. 15-21	97	40	
Rangoon	Oct. 26-Jan. 3	86	28	
Do	Jan. 4-Feb. 28	504	98	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 223; deaths, 76. Dec. 1-31, 1925: Cases, 485; deaths, 114.
Province—				
Anam	Aug. 1-Sept. 30	49	11	
Do	Dec 1-31	167	26	
Cambodia	Aug. 1-Sept. 30	40	9	
Do	Dec. 1-31	30	13	
Cochin-China				Aug. 1-Sept. 30, 1924: Cases, 115; deaths, 49. Dec. 1-31, 1924: Cases, 50; deaths, 13.
Saigon	Nov. 16-Jan.3	17	5	Including 100 square kilometers of surrounding country.
Do	Jan. 4-Feb 21	32	8	
Tonkin	Aug. 1-Sept. 30	19	7	
Do.	Dec. 1-31	238	62	
Iraq	June 29-Jan. 10	138	67	
Do	Jan. 11-20	4	2	
Bagdad	Nov 9-Dec. 27	2	1	
Do	Mar 1-7	1		
Italy				June 29-Dec. 27, 1924: Cases, 63.
Jamaica				Nov. 30, 1924-Jan. 3, 1925: Cases, 50. Reported as alastrim.
Do				Jan. 4-31, 1925: Cases, 43. Reported as alastrim.
Kingston	Nov 30-Dec. 27	4		Reported as alastrim.
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Nagasaki	Feb 9-Mar. 22	7	2	
Taiwan	Jan 1-31	1		
Java				
East Java—				
Pasoeroean	Oct 26-Nov. 1	9	1	
Do.	Nov 12-19			Epidemic in 2 native villages.
Soerabaya	Oct. 19-Dec. 31	685	212	
Do	Jan 15-Feb. 7	258	31	
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct 21-Nov. 14	2		
Do	Dec 20-Jan. 2	19	4	
Buitenzorg	Dec 25-31	1		Batavia Residency.
Cheribon	Oct. 14-Nov 24	15		
Do	Jan. 1-23	3		
Krawang	Jan. 15-21	1		
Pekalongan	Oct. 14-Nov 24	22		
Do	Dec 25-31	3		Province.
Pemalang	Jan. 8-14	1		Pekalongan Residency.
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5. Jan. 1-31, 1925: Cases, 5.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 1, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Daeths	Remarks
Lithuania	-			Jan. 1-31, 1925: Cases, 2.
Mexico:				
Durango	Dec. 1-31		5	
Do	Jan 1-Mar. 31		16	
Guadalajara	Dec 23-29		1	
Do	Jan. 6-Mar 23		4	
Mexico City	Nov 23-Dec. 27	5		
Do	Jan 11-Mar. 28	35		
Monterey				Jan. 24, 1925: Outbreak. Mar. 14, 1925, present.
Salina Cruz	Dec. 1-31	1	1	
Do	Feb 22-28	2		
Saltillo	Feb 22-Apr 11		2	
San Luis Potosi	Mar. 29-Apr. 11		2	
Tampico	Dec. 11-31	5	4	
Do	Jan 1-Mar. 31	59	18	
Vera Cruz	Dec 1-Jan. 3		10	
Do	Jan 5-Apr 5		38	
Villa Hermosa	Dec 28-Jan 10			Present. Locality, capital, State of Tabasco.
Yucatan State	Apr 5-11			In country towns.
Nigeria				January-June, 1924. Cases, 357; deaths, 87.
Do				July-November, 1924. Cases, 87; deaths, 25.
Persia:				
Teheran				Sept. 23-Dec 31, 1924: Deaths, 12.
Do	Jan 1-31		10	
Peru:				
Arequipa	Nov 24-30		1	
Do	Jan 1-31		3	
Philippine Islands:				
Manila	Mar. 29-Apr. 4	3		
Poland				Sept. 21-Dec 28, 1924. Cases, 30; deaths, 2.
Portugal:				
Lisbon	Dec 7-Jan 3	17		
Do	Jan 4-Mar. 14	78	7	
Oporto	Nov. 30-Dec 27	3	2	
Do	Jan 11-Mar. 14	3		
Russia				January-June, 1924 Cases, 18,220. July-November, 1924. Cases, 3,665.
Senegal:				
Dakar	Mar 16-22	4		
Siam:				
Bangkok	Dec 28-Jan. 3	1	1	
Do	Jan. 18-Feb 21		19	
Sierra Leone:				
Freetown	Feb 7-14	2		From S S Elmina.
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Do	Mar 19-25		1	
Cadiz	Nov. 1-Dec 31		51	
Do	Jan 1-Feb 28		10	
Madrid	Year 1924		40	
Do	Jan-Feb		13	
Malaga	Nov. 23-Jan 3		97	
Do	Jan 4-Apr 4		90	
Valencia	Nov. 30-Dec 6	2		
Do	Feb 15-Mar 28	5		
Straits Settlements:				
Singapore	Feb. 22-Apr. 4	3	1	
Switzerland:				
Lucerne	Nov 1-Dec 31	19		
Do	Jan 1-31	24		
Syria:				
Aleppo	Nov 23-Dec 27	13		
Do	Jan 4-Feb. 28	71	18	
Beirut	Feb 11-20	1		
Damascus	Jan. 6-13	2		
Do	Feb. 11-20	22		
Tripoli:				
Tripoli	July 14-Jan 2	53		
Tunis:				
Tunis	Nov 25-Dec. 29	42	35	
Do	Jan. 1-Apr 8		291	
Turkey:				
Constantinople	Dec. 13-19	5		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 1, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 14. Jan. 1-31, 1925: Cases, 4. Natives.
Cape Province	Feb. 1-7			Outbreaks.
De Aar District	Jan. 25-31			Outbreak at railway camp.
Do	Nov. 9-Jan. 17			Outbreaks.
Natal	Mar. 1-7			Do.
Orange Free State	Nov. 2-8			Do.
Ladybrand District	Jan. 15-31			Outbreak, on farm.
Transvaal	Nov. 9-Jan. 10			Do.
Do	Feb. 1-7			Outbreaks.
Uruguay				January-June, 1924: Cases, 101; deaths, 2.
Do				July-November, 1924: Cases, 53; deaths, 5.
On vessel.				
S. S. Eldridge	Mar 23	1		At Port Townsend, from Yokohama and ports.
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St. Malo, France, January, 1924, from Sfax, Tunis; believed to have imported smallpox infection.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec 20, 1924: Cases, 101; deaths, 14.
Algiers	Nov 1-Dec. 31	5	1	
Do	Jan. 1-Mar 10	10	4	
Argentina:				
Rosario	Jan 1-31		1	
Bolivia				
La Paz	Nov. 1-Dec 31	3		
Do	Jan 1-31	2		
Bulgaria				January-June, 1924. Cases, 191; deaths, 28.
Do				July-October, 1924: Cases, 5.
Chile.				
Concepcion	Nov. 25-Dec. 1		1	
Do	Jan 6-12		2	
Do	Jan 27-Feb. 2		1	
Iquique	Nov. 25-Dec. 1		2	
Do	Feb. 1-7		1	
Talcahuano	Nov 16-Dec. 20		5	
Do	Jan 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-Mar. 7		11	
Chosen.				
Chemulpo	Feb 1-28	1		
Seoul	Nov. 1-30	1	1	
Do	Feb. 1-28	2	1	
Czechoslovakia				December, 1924: Cases, 5.
Do	Jan. 1-31	14		
Egypt.				
Alexandria	Dec. 3-9	1	1	
Do	Mar. 12-18	1		
Cairo	Oct. 1-Dec. 23	13	8	
Esthonia				Dec. 1-31, 1924: Cases, 5.
Do	Jan. 1-31	4		
France				July-October, 1924: Cases, 7.
Gold Coast				Oct 1-31, 1924: 1 case.
Greece				May-June, 1924: Cases, 116; deaths, 8.
Do				July-December, 1924: Cases, 40; deaths, 4
Saloniki	Nov 17-Dec. 15	3	2	
Do	Jan. 25-31	1		
Japan				Aug. 1-Nov. 15, 1924: Cases, 2.
Latvia				October-December, 1924: Cases, 30.
Lithuania				August-October, 1924: Cases, 15; deaths, 1.
Do				Jan. 1-31, 1925: Cases, 27; deaths, 2.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 1, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Mexico:				
Durango	Dec. 1-31		1	
Do	Mar. 15-31	1	1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District.
Do	Jan. 11-Mar. 28	73		
San Luis Potosi	Mar. 8-14		1	
Morocco				November, 1924: Cases, 5.
Palestine				Nov. 12-Dec. 29, 1924: Cases, 10.
Ekrón	Dec. 23-29	1		
Jerusalem	do	2		
Do	Jan. 20-26	1		
Mikveh Israel	do	1		
Ramleh	Feb 10-16	1		
Tiberias	Feb 24-Mar. 2	2		
Peru.				
Arequipa	Nov. 24-Dec 31		3	
Poland				Sept 28, 1924-Jan. 3, 1925: Cases, 751; deaths, 57.
Portugal:				
Lisbon	Dec 29-Jan 4		2	
Oporto	Jan 4-Feb. 7	2		
Rumania				January-June, 1924: Cases, 2,906; deaths, 328.
Do				July-December, 1924. Cases, 288; deaths, 38.
Constanza	Dec 1-20	1		
Do	Feb. 1-28	2		
Russia				Jan 1-June 30, 1924: Cases 95,682. July-November, 1924: Cases, 34,729.
Leningrad	June 29-Nov. 22	12		
Spain.				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Sweden				
Goteborg	Jan 18-Feb. 28	2		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Tunis	Mar. 5-25	9	1	
Do	Apr. 2-8	3		
Turkey.				
Constantinople	Nov. 15-Dec. 19	6	1	
Do	Jan. 2-Mar. 7	9	1	
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 345; deaths, 87 Jan. 1-31, 1925: Cases, 94; deaths, 12; native. In white population, cases, 2.
Cape Province	Nov. 1-Dec. 31	126	24	Jan 1-31, 1925: Native, cases, 41; deaths, 6.
Do	Feb. 1-Mar. 7			Outbreaks.
East London	Nov. 16-22	1		
Do	Jan. 18-24	1		
Port Elizabeth	Feb. 22-28	1		
Natal	Nov. 1-Dec. 31	130	50	
Do				Jan 1-31, 1925. Cases, 28; deaths, 4. Native.
Do	Mar. 1-7			Outbreaks.
Durban	Feb 15-21	1		
Orange Free State	Nov. 1-Dec. 31	59	8	Jan. 11-31, 1925: Cases, 16, deaths, 2. Native.
Do	Feb. 15-21			Outbreaks.
Transvaal	Nov. 1-Dec. 31	30	5	
Do				Jan. 1-31, 1925: Cases, 9. Native.
Yugoslavia				Aug 3-Oct. 18, 1924: Cases, 17; deaths, 2. Mar. 8-14, 1925: Cases, 1.
Belgrade	Nov. 24-Dec. 28	5		

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Gold Coast	October-November, 1924.	4	4	
Salvador:				
San Salvador	June-October, 1924.	77	28	Last case, Oct. 22, 1924.

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PUBLIC HEALTH REPORTS

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COOPERATIVE COUNTY HEALTH WORK

By THOMAS PARRAN, Jr., Surgeon, United States Public Health Service

County health service, under the direction of whole-time health officers, has become an integral and important part of the public health machinery in many States. Each year it assumes a more important place in the State health programs as additional counties avail themselves of this service [1] and as those health authorities who are interested in one or another special phase of health administration realize that a county health department furnishes the best means for conducting in rural districts each special health activity as a part of a general health program.

Many requests are received by the Public Health Service, and by public health officers engaged in county health work, from physicians, county authorities, volunteer health agencies, and the public generally, for information as to this work. It is in general response to such requests that this statement has been prepared outlining the method of securing, plan of organization, cost, and activities of, a county health department. The problems, and the methods used in their solution, vary somewhat in each State, but there are certain activities common to all and certain methods which are generally applicable.

METHOD OF SECURING A COUNTY HEALTH DEPARTMENT

County authorities ordinarily are not disposed to appropriate funds for health work unless they are convinced that public sentiment in the county will approve their action. Therefore, the usual first step in securing the establishment of a county health department is to conduct a campaign of education in the county to show the advantages and economy of public expenditures for this purpose. In most communities there is a large latent sentiment favoring public health work. This sentiment should be activated and vocalized. The physicians of the county should be informed of the

[1] Number of counties or districts in the United States in which, as of January 1 of each year, the rural sections were provided with local health service under whole-time local (county or district) health officers: 1920—109; 1921—161; 1922—202; 1923—230; 1924—250; 1925—280. (Lumsden, L. L.: Extent of Rural Health Service in the United States. Pub. Health Rep., vol. 40, No. 19, May 8, 1925, pp. 930-941.)

project and their assistance solicited. Frequently there are volunteer health organizations which will actively support and foster the plan. Women's organizations, luncheon clubs, chambers of commerce, farmers organizations, labor unions, educational associations, and other organizations may help to secure the establishment of a health department. In other instances it may be desirable to form a health committee composed of leading citizens of the county to organize public sentiment. In any event, when a sufficient number of citizens is convinced of the desirability of having a health department, a hearing should be had before the county authorities and a personal request made for the adoption of the plan, and for the appropriation of necessary funds. The plan presented should be definite, the contemplated cost should be made known, the purposes of each item of expenditure should be stated, and the results to be expected in service rendered should be made clear.

When a campaign for a health department is started in a county, the county authorities should be apprised of the plan. It is desirable for some local organization to initiate the campaign and to request assistance, if needed, from the State health department in creating favorable sentiment. Occasionally county authorities are found who are convinced of the inherent soundness of the plan and are willing to appropriate funds without waiting for an expression of public sentiment. In such cases it is still important to inform the people of the county fully as to the functions of the health department so that public cooperation, which is essential to success, may be had by the health officer.

Although the general procedures outlined above are usually applicable, the most effective methods for each county must be determined from a knowledge of local conditions. Sometimes the presence of an epidemic will serve to emphasize the need for health service. Again, a sanitary and health survey of a county will show the need for corrective measures or will bring to light existing inefficiency of, or waste of funds by, incoordinated or part-time health service.

PLAN OF ORGANIZATION

In a county where the largest city does not exceed 50,000 population it is usually desirable in the interest of efficiency and economy to form a combined county and city health department under the administration of one health officer. Even where local conditions preclude such a combination, the county health officer should have general advisory authority over all health work in the county. Every county health officer should be required to observe and enforce all State and local health laws, ordinances, and regulations throughout his jurisdiction.

The laws and regulations governing the appointment of county health officers vary in different States. The appointing power usually is vested in the county authorities (boards of supervisors, county commissioners, etc.), or in a county board of health appointed by the county authorities. Some control by the State is or should be exercised to assure appointment on the basis of efficiency. In the absence of specific legal authority to name or to approve the appointment of the county health officer, the use or the withholding of State financial aid often serves the purpose. The position should be removed from partisan political control either on the part of the State or county, and the local authorities should be given all possible responsibility compatible with efficient service.

The county medical society's support of the project is important, and, where the laws permit, its indorsement of the person appointed as health officer should be secured.

The health officer is responsible to the county and to the State for the proper and efficient performance of his duties. He should agree to devote his entire time to the duties of his office and not to engage in private practice. Whenever possible, it is desirable to secure a health officer who has had special public health training or experience, but the personal equation of the health officer is the most important single factor in success. The entire personnel of the county health department should be appointed by and work under the direction of the health officer.

In the State health agency there should be a State director of county health service, who should be preferably the assistant State health officer, with administrative charge of the organization and maintenance of county health departments. Under the administrative supervision of the State health officer he should direct the general policies of the several special divisions of the State health department, such as child hygiene, tuberculosis, venereal disease, sanitation, etc., with respect to those counties with whole-time health departments. By such arrangement proper sequence and proper relative values may be observed in coordinating all special phases of health work into one well balanced health program best suited to the needs of the particular county. Expert assistance and advice should be available from the State and also the Federal health service in connection with special health problems, and the county health department should serve as the agency by and through which most State and Federal health activities are conducted in the county.

Except in rare instances permanent progress has not been made in county health work without financial and technical assistance from extra county sources. The United States Public Health

Service and the International Health Board have made funds and personnel available to many States with which to initiate the development and assist in the maintenance of county health departments. In a number of the States special legislative appropriations are now available for subsidizing county health departments.[1] The counties themselves should provide at least one-half of the budget at the outset, and a larger percentage in succeeding years.

PERSONNEL AND COST OF A COUNTY HEALTH DEPARTMENT

The cost of a county health department will vary with the area, population, and taxable resources of the county, and with the willingness of the people to provide themselves with health service.

For all except the most sparsely populated and poorest counties the minimum cost of a county health department should be at least $10,000 a year. In the more populous counties a larger budget will be needed to secure adequate service. In general, it may be stated that an expenditure of 50 cents per capita per annum should furnish a county with reasonably adequate health service. (This does not include hospital expenses, bedside nursing, or pauper relief.) A budget of 25 cents per capita should be the minimum in any except the poorest counties.

The minimum personnel should include a full-time medical health officer, one nurse or sanitary inspector, and an office clerk. A much more efficient organization will be secured if both a nurse and sanitary inspector are provided. Larger organizations include additional nurses and inspectors, and in some instances a dentist, sanitary engineer, nutrition worker, bacteriologist with laboratory, etc.

Typical budgets may be distributed as follows:

Item	County A	County B	County C
Salary, county health officer	$4,800	$4,200	$3,600
Salary, public health nurse	2,000	1,800	1,800
Salary, sanitary inspector	1,800	1,500	1,500
Salaries, additional nurses or inspectors	3,000	1,500	.....
Salary, office clerk	1,200	900	750
Travel expenses	2,400	1,800	1,800
Contingent expenses	800	800	550
Total annual cost	16,000	12,500	10,000

In addition to the above amounts, the county should provide and equip suitable quarters for the health office, preferably in the court house or in some other central location.

[1] In about 20 of the States such appropriations have been provided. The Public Health Service is giving assistance to about 76 counties in 19 States and the International Health Board to about 105 counties in about 23 States.

ACTIVITIES OF A COUNTY HEALTH DEPARTMENT

All of the activities outlined herein rarely can be conducted in any one county, owing to limited funds and personnel. Every activity mentioned, however, is now being conducted by some county health departments. During the first years especially, the health officer should concentrate on the most important of his problems rather than dissipate his efforts in too many directions.

The county and State health authorities should agree upon a health program to be undertaken, the general guides being (*a*) the relative importance and the relative preventability of the disease or group of diseases, (*b*) the conjectural value of those health activities not directed specifically against particular diseases, and (*c*) the psychological response of the people to the service.

HEALTH EDUCATION

The primary duty of the county health department is to interest and educate the people of the county in matters pertaining to the cause and prevention of communicable diseases and the possibilities for community health promotion. This is accomplished by—

1. *Public addresses*, using, where desirable, illustrations with lantern slides, charts, models, or motion pictures;

2. *Educational literature* furnished by the Public Health Service, the State health department, and other public health agencies dealing with various phases of health conservation;

3. *News articles* in the press of the county relating to the work of the health department and to general health subjects;

4. *Public health exhibits* at county and community fairs, public schools, and such other places as may be practicable;

5. *Other educational methods* to interest and inform the people in the importance of health protection.

In the execution of the above, and all other phases of health work, the health officer should enlist the support and cooperation of all available organizations and agencies.

CONTROL OF ACUTE COMMUNICABLE DISEASES

Prompt and efficient measures of communicable disease control are conducted. These include the following:

1. *Reports of cases*, and suspected cases, of notifiable diseases are secured from physicians, school authorities, and heads of households. In general, the completeness of morbidity reports will vary directly with the intelligent use made of them by the health department.

2. *Quarantine and isolation procedures* are enforced as required by law.

3. *Epidemiological investigations* are made to determine the source of disease as a basis for its elimination. Every primary case of

smallpox, diphtheria, scarlet fever, typhoid fever, poliomyelitis and cerebrospinal meningitis should be visited by the health officer *in person* whenever possible for this purpose.

4. *Home visits* are made by the nurses to give instruction to the household in the prevention of the spread of disease.

5. *Office records and a spot map* are kept to show the current and past prevalence of communicable diseases.

6. *Consultations are held with attending physicians* relative to cases of communicable disease whenever there may be difference of opinion as to the diagnosis.

7. *Free immunizations* are done for educational and demonstrational purposes in the prevention of smallpox, typhoid fever, and diphtheria. An harmonious understanding of this matter should first be had with the local medical profession and the cooperation of its members be secured.

8. *Biologics,* when distributed free by the State health department, may be handled by the county health office, or the county health officer should see that these biologics are kept under proper conditions and in sufficient quantities for the needs of the county.

LABORATORY WORK

Either State or local laboratory facilities should be provided to aid in the diagnosis of communicable diseases and to control water and milk supplies. It is especially desirable to have a laboratory in connection with the county health department when State laboratory facilities are not located so as to be available for prompt service.

VENEREAL DISEASE CONTROL

1. Educational measures for the promotion of social hygiene are conducted by all practical and usual methods.

2. The health department provides or sees to it that adequate treatment is provided for all persons infected with a venereal disease who are unable to pay a private physician for this service. Arsphenamine should be furnished without cost to any physician in the county for the treatment of indigent patients.

3. The health department should cooperate with the agencies primarily responsible for law enforcement and should take the initiative in mobilizing public sentiment to enact or enforce necessary legal measures.

TUBERCULOSIS CONTROL

1. An educational campaign is conducted concerning tuberculosis prevention. This is done especially in the schools and will include classes, lantern slides, moving pictures, suitable literature on the subject, instruction in personal hygiene, and other effective methods.

2. Reports are secured in so far as possible of all persons in the county who are suffering from tuberculosis.

3. Diagnostic clinics are held in cooperation with the local medical profession for the examination of tuberculosis suspects.

4. Visits are made by the nurses to the homes where cases of tuberculosis exist, to give the patient and the household such nursing instruction as will enable them to utilize to best advantage the treatment prescribed by their physician; and to advise with them concerning those sanitary precautions necessary for the prevention of the spread of the disease to others. Efforts should be made to secure sanitarium care of tuberculosis cases, especially for open cases of the disease, and if sanitarium facilities are not available, special efforts should be made to provide proper home care of patients.

5. Physical examinations of the school children will be made with the view of discovering potential and early cases, and of preventing cases by efforts designed to improve child health.

CONTROL OF SPECIAL DISEASES

Such diseases as malaria, hookworm disease, or trachoma offer special problems in many counties. In such cases appropriate additions should be made to the general health program. One of these diseases may be of sufficient importance to justify the major effort of the health department to be directed against it for considerable periods of time.

Malaria.—Prior to the institution of malaria control work it is necessary—

1. To secure knowledge of the prevalence of the disease and of malaria-carrying mosquitoes, not only for the county as a whole but for the various localities in the county (towns, townships, or school districts). This knowledge may be determined by a mosquito survey, blood and spleen examinations, history of attacks among school children, and reports from physicians.

2. To formulate a definite and practical program for malaria control both in urban and rural areas.

3. To educate the public by all available means as to the nature and extent of the problem and the measures necessary for its solution.

Malaria control procedures vary greatly, but in general they include one or more of the following:

1. Eradication of mosquitoes by drainage, use of larvicides, or fish.

2. Preventing the infection of mosquitoes and of man by screening and by prophylactic doses of quinine to man.

3. Curing cases and carriers of malaria by thorough treatment, using the standard method of quinine administration.

Hookworm disease.—Knowledge of the prevalence of this disease, gained by examinations of feces, and the education of the public form the basis for a control program. This program is directed towards—

1. Sanitary disposal of excreta in rural districts by means of sanitary privies to prevent dissemination of the disease.

2. Cure of existing cases by administration of antihelmenthics to eliminate sources of infection.

Trachoma.—Where this disease is prevalent, the cure of existing cases by surgical treatment offers the best method of eradicating it. Special assistance from the State or from the United States Public Health Service often may be secured in conducting trachoma clinics and in establishing temporary hospital facilities needed for the patients.

SANITATION

Provision of safe public water and milk supplies, and of sanitary methods of excreta and sewage disposal constitutes a primary duty of any health department, and concerted efforts to secure these sanitary essentials ordinarily will precede all other activities except immediate measures for the control of communicable diseases.

1. *Towns.*—The health department will make a sanitary survey of all towns in the county with particular reference to the source and safety of the water supply, the methods of excreta diposal, the safety of the public milk supplies, and the general sanitary conditions of the towns.

The services of the State sanitary engineer should be available for aiding the health officer in the solution of municipal water and sewage problems. Efforts are made to have any insanitary conditions corrected by education of the public and by adoption and enforcement of necessary laws or ordinances. A special effort will be made by the health officer to secure the installation of sanitary privies at those places where connection with a sewerage system is impracticable.

The provision of safe public milk supplies should be assured by the adoption and enforcement of model milk ordinances. Sanitary inspections are made of dairies, milk depots, and food establishments to see that proper sanitary conditions prevail.

2. *Schools.*—In addition to making an annual sanitary survey of all schools in the county, the health officer should make a persistent effort to induce the school boards to provide a safe supply of drinking water, sanitary toilets or water-closets, adequate light and ventilation, and such other facilities at each school as are needed properly to safeguard the health of the pupils.

3. *Rural homes.*—Improvements in the sanitary condition of rural homes will be accomplished by educating the individual householder to the need for a sanitary privy, a safe water supply, and adequate screening. Supervision and assistance should be given in the construction of rural sanitary privies.

4. *Public buildings.*—Periodic inspection should be made of public buildings and institutions in the county and recommendations made to responsible authorities for correction of any insanitary conditions.

CHILD HYGIENE

1. *Prenatal, infant, and preschool hygiene.*—Midwives are instructed and supervised; home visits are made by the nurse; and mothers' classes are held to give individual and group instruction in the diet and care of babies, the importance of prenatal medical care and hygiene, and the importance of birth registration. Baby conferences are held in various parts of the county, in cooperation with the local physicians, where examinations are made to detect physical and dietary defects and to encourage their correction. A general educational campaign is conducted in regard to the various phases of child hygiene.

2. *School hygiene.*—Physical examinations are made of all school children in the county, except where parents do not desire this service. Parents and school authorities are notified concerning defects found, and home visits are made by the nurse to urge that the family physician or dentist be consulted concerning correction of defects. For those children whose parents are unable to pay for medical treatment in the correction of defects, arrangements should be made, preferably through the local medical profession, whereby corrective treatment may be secured. Nutrition classes are held and mothers are instructed regarding the proper diet and food for children. The serving of hot lunches and milk in schools is promoted.

OTHER ACTIVITIES

1. Complete registration of vital statistics in the county is promoted or maintained by investigation of conditions, by cooperation with local registrars, physicians, and the public, and, where necessary, by law enforcement.

2. In some States the county health officer is required to perform the duties of county physician to the poor. Except in the smaller counties this is not a desirable arrangement.

3. Miscellaneous medical examinations sometimes are performed, including examinations for marriage license, for children's work certificates, for teachers' certificates, for admission to insane institutions, etc.

4. Periodic health examinations are encouraged and may be performed to some extent by the health officer.

5. Industrial hygiene problems may present themselves for solution in some counties.

6. Accident prevention and safety campaigns may be conducted or promoted by the health department.

7. Mental hygiene, a problem of great and growing importance, should be a concern of the health officer, although at present little or nothing is being done by county health departments toward its solution.

8. Records of all activities of the county health department are kept on suitable forms, and reports are made as required by State regulations. These reports include current, weekly or monthly, reports of communicable diseases to the State health department and should include monthly and annual financial, statistical, and narrative reports to the local and State authorities.

ANNUAL REPORT OF THE MARSHALL COUNTY (ALA.) HEALTH UNIT

The first annual report of the Marshall County (Ala.) Health Unit, covering the year ending February 28, 1925—the first year of its existence—indicates a high-grade demonstration in efficient, economical, well-rounded county health service and is published here because of its interest to persons concerned in the development of rural health service and to health officers generally.

The county health unit consists of four members, namely, the county health officer, Dr. Walter H. Harper, one nurse, one secretary, and one sanitary inspector.

The following is taken from Doctor Harper's report submitted to the county board of commissioners:

POPULATION

The total population of Marshall County, Ala., is 34,314, of which number 33,027 are white and 1,287 are colored. The county covers an area of 602 square miles, has 6,200 homes, and a school enrollment of 7,839.

VITAL STATISTICS

Births and deaths reported in the entire county during the year ending February 28, 1925

	Births		Deaths	
	Number	Rate per 1,000 population	Number	Rate per 1,000 population
Total	[1] 890	25.9	[2] 257	7.5
White	853	25.8	241	7.3
Colored	37	28.7	16	12.4

[1] Births reported by physicians, 746; by midwives, 144. Percentage of stillbirths for the year, 3.4 per cent.

[2] Total deaths under 1 year of age, 41 (16 per cent).

The unusually low death rate is no doubt due to incomplete death registration. Marshall County is almost entirely rural; the northern portion being mountainous and inaccessible at times. There are few undertakers in the county, and a number of deaths occur in which the bodies are buried without death certificates and burial permits being obtained. The county health unit has spent considerable time in bringing this condition to the attention of the people, and toward the end of the year some improvement was seen in the death registration. We hope soon to have a complete death registration.

Reportable diseases for the year ending February 28, 1925

Disease	Cases	Disease	Cases
Diphtheria	12	Scarlet fever	16
Gonorrhea	9	Smallpox	6
Measles	15	Syphilis	9
Pellagra	5	Tuberculosis (new cases)	18
Pneumonia	140	Typhoid fever	33

LABORATORY

The laboratory service to the Marshall County Health Unit has been rendered by the State board of health branch laboratory at Anniston, Ala. The laboratory has been used by every doctor in the county. It has been of inestimable value, as will be seen by the accompanying table.

Laboratory examinations

	Positive	Negative	Total
Blood Wassermanns	8	71	79
Blood cultures for typhoid	1	7	8
Feces cultures for typhoid	12	63	75
Blood for Widal	2	11	13
Blood for malaria	2	5	7
Feces for hookworm	220	953	1,173
Sputum for tuberculosis	21	44	65
Throat cultures for diphtheria	9	33	42
Animal heads for Negri bodies	1	3	4

Every person who was found to have hookworm infection was treated by the health unit.

SANITATION

At the beginning of the year the county health unit, through the sanitary department, introduced ordinances in Arab, Albertville, and Boaz requiring all persons to have sanitary pit privies. These ordinances were adopted, and now the three towns are about 100 per cent sanitary. All open-back privies in the three towns were abolished as nuisances. The town of Guntersville had installed the box and can type toilets, but recently the town has passed an ordinance requiring all persons within the police jurisdiction (one mile from

corporate limits) to install the sanitary pit privies. When the health unit began its work 12 months ago there were 40 schools in the county without any sanitation at all. Since then 28 have been made completely sanitary.

Sanitary inspections of food-handling establishments have been made monthly; and as a result, wonderful improvement has been noted in the general sanitary condition of all food-handling establishments in the county.

The following is a tabulated report of the work done in sanitation by the Marshall County Health Unit:

Sanitary inspections:	
Private premises	3, 035
Schools	96
Food-handling establishments	92
Sanitary privies installed:	
Septic tanks	33
Pit privies (rural)	26
Pit privies (urban)	533
Nuisances abated (not including the 592 open-back privies abolished)	62

FOOD HANDLERS

The county health unit introduced ordinances in Guntersville, Albertville, and Boaz requiring all food handlers to be examined for communicable diseases by the county health officer and permitting only those who are free from communicable diseases to work in food-handling establishments. These ordinances were adopted, and 96 food handlers were examined. Of that number five were found to have syphilis and one had tuberculosis.

MALARIA CONTROL

Malaria control activities have been carried on throughout the entire year, but not on a large scale, as malaria is not very prevalent in Marshall County.

The following is a list of the malaria-control activities for the year:

Yards of new ditching, 4,372; yards of maintenance of ditches, 6,260; square feet of oiling, 16,240; picture shows, 4; literature, 1,115 copies.

CHILD HYGIENE AND SCHOOL WORK

Examination of all school children in the county was the first big item in connection with this work. Although that was not entirely completed during the first year of the health unit, it will be completed before the close of the present school term. Also, health lectures and moving picture shows were given in the schools. Notices were sent to all parents who had defective children, informing them

of the defects and urging that they be corrected. Health score charts were posted in every school. This was the first time that the school children of Marshall County had ever been examined, and so the health unit concentrated on the work of completing the examinations first and then doing the follow-up work. The following table shows only the defects corrected that have been reported to the health unit. There are a great many others that have been corrected, and the follow-up work on them will be completed during the present school term. The following table gives the work done among the school children:

Schools visited	61
Number of children examined	6, 968
Number found defective	4, 211
Corrections reported	31

MATERNITY AND INFANCY

As the accompanying table shows, much more time was given to individual infancy and maternity work than to group work. Several maternity and infancy clinics were started last fall, but were discontinued when cold weather came.

The nursing service has been very inadequate, because the nurse is compelled to divide her time between maternity and infancy work and child hygiene and school work.

The following table summarizes the activities during the year:

Prenatal

Cases given examination and advice	209
Number of home visits	226

Infant and preschool

Babies and children examined	145
Nursing visits	245
Clinics organized	4

TYPHOID FEVER CONTROL

During the summer of 1924 the health unit conducted an extensive antityphoid inoculation campaign. During that time 24,229 injections of typhoid serum were given to 8,425 persons. Of this number, 7,752 completed the treatment of three inoculations each, which is over 90 per cent. On July 8, 1924, 1,269 people were inoculated, in the court house at Albertville. The number of people completing the treatment (7,752) represents 22.6 per cent of the entire population of Marshall County. A record was kept of every person receiving the typhoid serum.

During the summer 75 feces cultures were obtained from patients and contacts. The feces cultures on contacts proved valuable, as by that means a typhoid carrier was found. This carrier is a young girl

13 years old, who gave no history of ever having typhoid fever. She was found to be responsible for five cases of typhoid fever.

The following is of interest:

Typhoid death rate per 100,000 (1919–1923)	21.0
Typhoid death rate per 100,000 (1924)	8.8

TUBERCULOSIS CONTROL

The county health unit has made every effort to locate and get in touch with every case of pulmonary tuberculosis in the county. To begin with, there were 18 cases reported by the medical profession of the county. The health unit started with these 18 cases and in different ways has been able to list 48 cases. These patients have been examined, advised, and given literature, but only in cooperation with their family physicians. Follow-up visits have been made from time to time on all cases.

All contacts have been instructed and advised about the disease. Considerable educational work on pulmonary tuberculosis has been carried out by means of lectures and motion picture shows.

There are 154 contacts living with the 48 cases of tuberculosis.

VENEREAL DISEASE CONTROL

Venereal disease control has been carried on by three physicians in the county who have been appointed by the State board of health to treat indigent cases of venereal diseases. These cooperative clinics are supported by the Bureau of Venereal Disease Control of the State Board of Health.

GENERAL ACTIVITIES

The following educational activities were carried out during the year:

Total number of lectures	53
Total attendance	4,295
Number of pamphlets issued	5,969
Number of newspaper articles	69
Motion-picture shows	15
Attendance at motion-picture shows	2,278

Other activities of the Marshall County Health Unit for the year were as follows:

Cases quarantined	53
Arrests and convictions for quarantine violations	3
Visits to cases by health officer	195
Smallpox vaccinations	194
Life extension examinations	106
Number of persons treated for hookworm infection	220
Number of calls to county institutions	9
Hours spent in interest of vital statistics	258
Hours spent in interest of communicable disease reporting	244
Hours spent in interest of maternity and infancy	1,596

FINANCIAL

Receipts

Marshall County	$5, 000
State board of health	2, 500
State and Federal maternity and infancy fund	1, 275
	8, 775

Disbursements

Salaries	6, 147. 51
Travel	1, 421. 03
Miscellaneous	1, 061. 68
	8, 630. 22
Balance unused	144. 78

WHOLE-TIME COUNTY HEALTH OFFICERS, 1925

The following directory has been compiled from data furnished as of January 1, 1925, by State health officers. Similar directories for 1922, 1923, and 1924 have been published in the Public Health Reports. The directory for 1924 was issued as Reprint No. 922.

In the questionnaire sent for the purpose of obtaining the necessary information, a "whole-time" county health officer was defined as "one who does not engage in the practice of medicine or any other business, but devotes his whole time to official duties."

Directories of State health departments have been published annually by the Public Health Service for the years 1912 to 1924, inclusive. The directory for 1924 was issued as Reprint No. 949 from the Public Health Reports.

Directories of city health officers have been published annually for the years 1916 to 1924, inclusive, the directory for 1924 being Reprint No. 930.

Directories of State and city health officers for 1925 will be published later.

County	Name of health officer	Post-office address	Official title
Alabama:			
Baldwin	G. C. Marlette, M. D	Bay Minette	County health officer.
Barbour	E. M. Moore, M. D	Clayton	Do.
Calhoun	G. A. Cryer, M. D	Anniston	Do.
Colbert	W. T. Burkett, M. D	Tuscumbia	Do.
Covington	W. G. Smillie, M. D	Andalusia	Do.
Dallas	L. T. Lee, M. D	Selma	Do.
Escambia	W. C. Hatchett, M. D	Brewton	Do.
Etowah	C. L. Murphree, M. D	Gadsden	Do.
Franklin	L. J. Graves, M. D	Russellville	Do.
Houston	T. E. Tucker, M. D	Dothan	Do.
Jefferson	J. D. Dowling, M. D	Birmingham	Do.
Lauderdale	W. D. Hubbard, M. D	Florence	Do.
Limestone	H. K. Gallagher, M. D	Athens	Do
Madison	B. F. Austin, M. D	Huntsville	Do.
Marengo	F. E. Kitchens, M. D	Linden	Do.
Marshall	W. H. Harper, M. D	Guntersville	Do
Mobile	C. A. Mohr, M. D	Mobile	Do
Montgomery	J. L. Bowman, M. D	Montgomery	Do.
Morgan	H. C. McRee, M. D	Albany	Do.
Pike	W. H. Abernethy, M. D	Troy	Do.
Sumter	J. S. Hough, M. D	Livingston	Do.
Talladega	J. H. Hill, M. D	Talladega	Do.
Tuscaloosa	A. A. Kirk, M. D	Tuscaloosa	Do.
Walker	A. M. Waldrop, M. D	Jasper	Do.

County	Name of health officer	Post-office address	Official title
Arizona:			
Cochise	R. B. Durfee, M. D	Bisbee	County superintendent of public health.
Arkansas:			
Pulaski	V. T. Webb, M. D	Little Rock	County health officer.
Washington	J. J. Johnson, M. D	Foreman	Do.
California:			
Los Angeles	J. L. Pomeroy, M. D	Los Angeles	Do.
Monterey	R. C. Main, M. D	Salinas	Do.
Orange	V. G. Presson, M. D	Santa Ana	Do.
San Diego	A. M. Lesem, M. D	San Diego	Do.
San Francisco	Wm. C. Hassler, M. D	San Francisco	Do.
San Joaquin	J. J. Sippy, M. D	Stockton	Do.
San Luis Obispo	H. K. Sutherland, M. D	San Luis Obispo	Do.
Georgia:			
Baldwin	Sam A. Anderson, M. D	Milledgeville	Commissioner of health.
Bartow	H. E. Felton, M. D	Cartersville	Do.
Bibb	C. L. Ridley, M. D	Macon	Health officer.
Clarke	J. D. Applewhite, M. D	Athens	Commissioner of health.
Cobb	L. L. Welch, M. D	Marietta	Do.
Decatur	M. A. Fort, M. D	Bainbridge	Do.
De Kalb	W. A. Harrison, M. D	Decatur	Do.
Dougherty	Hugo Robinson, M. D	Albany	Do.
Floyd	B. V. Elmore, M. D	Rome	Do.
Glynn	H. L. Akridge, M. D	Brunswick	Do.
Hall	B. D. Blackwelder, M. D	Gainesville	Do.
Laurens	O. H. Cheek, M. D	Dublin	Do.
Lowndes	G. T. Crozier, M. D	Valdosta	Do.
Miller	M. A. Fort, M. D	Bainbridge	Health officer.
Mitchell	C. O. Rainey, M. D	Camilla	Commissioner of health.
Richmond	H. B. Neagle, M. D	Augusta	Do.
Seminole	M. A. Fort, M. D	Bainbridge	Health officer.
Sumter	J. W. Payne, M. D	Americus	Commissioner of health.
Thomas	M. E. Winchester, M. D	Thomasville	Do.
Troup	C. S. Kinzer, M. D	Lagrange	Do.
Walker	J. H. Hammond, M. D	La Fayette	Do.
Illinois:			
Cook	H. L. Wright, M. D., Dr. P. H	Chicago, 922, County Building.	County health officer.
Crawford	C. E. Price, M. D	Robinson	Do.
Morgan	T. D. Mann, M. D	Jacksonville	Do.
Sangamon	R. V. Brokaw, M. D	Springfield	City and county health officer.
Iowa:			
Dubuque	D. C. Steelsmith, M. D	Dubuque	County health officer.
Washington	C. W. Stewart, M. D	Washington	Do.
Kansas:			
Cherokee	J. C. Montgomery, M. D	Columbus	Do.
Geary	I. O. Church, M. D	Junction City	Do.
Lyon	J. S. Fulton, M. D	Emporia	Do.
Marion	S. M. Mallison, M. D	Marion	Do.
Ottawa	W. J. Lynn, M. D	Minneapolis	Do.
Sheridan	L. S. Steadman, M. D	Hoxie	Do.
Kentucky:			
Boyd	Robert D. Higgins, M. D	Ashland	Director.
Daviess	George W. Duvall, M. D	Owensboro	Do.
Fayette	J. S Chambers, M. D	Lexington	Do.
Fulton	J. M. Hubbard, M. D	Hickman	Do.
Jefferson	Irvin Lindenberger, M. D	Louisville	Health officer.
Johnson	J. W. Duke, M. D	Paintsville	Director (acting).
Mason	V. D. Guittard, M. D	Maysville	Director.
Scott	Albert Steward, M. D	Georgetown	Do.
Louisiana:[1]			
Beauregard	Austin F. Barr, M. D	De Ridder	Parish health officer.
Caddo	W. J. Sandige, M. D	Shreveport	Do.
Claiborne	John R. Turner, M. D	Homer	Do.
De Soto	P. B. Gardner, M. D	Mansfield	Director parish health unit.
Natchitoches	W. W. Knipmeyer, M. D	Natchitoches	Do.
Ouachita	John Schreiber, M. D	Monroe	Deputy health officer and director parish health unit.
St. Mary	Thos. B. Wilson, M. D	Franklin	Director parish health unit.
Tangipahoa	W. C T. Ellis, M. D	Amite	Parish health officer.
Washington	F. Michael Smith, M. D	Franklinton	Director parish health unit.

[1] Parishes.

County	Name of health officer	Post-office address	Official title
Maryland:			
Allegany	C. C. McCulloch, jr., M. D	Cumberland	Deputy State health officer.
Baltimore	J. S. Bowen, M. D	Towson	Do.
Calvert	I. N. King, M. D	Barstow	Assistant deputy State health officer.
Carroll	W. C. Stone, M. D	Westminster	Deputy State health officer.
Frederick	E. C. Kefauver, M. D	Frederick	Assistant deputy State health officer.
Montgomery	W. T Pratt, M. D	Rockville	Deputy State health officer.
Massachusetts:			
Barnstable	A. P. Goff, M. D	Hyannis	District health officer.
Minnesota:			
St. Louis	H. G. Lampson, M. D	Duluth	County health officer
Mississippi:			
Bolivar	R. D. Dedwylder, M. D	Cleveland	Director county health department.
Coahoma	R. R. Kirkpatrick, M. D	Clarksdale	Do.
Forrest	W. D. Beacham, M. D	Hattiesburg	Do.
Hancock	C. M. Shipp, M. D	Bay St. Louis	Do.
Harrison	D. J. Williams, M. D	Gulfport	County health officer.
Jackson	W. E. Sharp, M. D	Pascagoula	Director county health department.
Jones	J. M. Kittrell, M. D	Laurel	Do.
Lee	J. B. Black, M. D., C. P. H	Tupelo	Do.
Pearl River	W. B. Harrison, M. D	Poplarville	Do
Sharkey	A. K. Barrier, M. D	Rolling Fork	Do.
Washington	A. J. Ware, M. D	Greenville	County health officer
Missouri·			
Dunklin	E. L Spence, M. D	Kennett	Do.
Gentry	E M. Lucke, M. D	Albany	Do.
Greene	U. F. Kerr, M. D	Springfield	Do.
New Madrid	Wm. N. O'Bannon, M. D	New Madrid	Do.
Nodaway	C. P. Fryer, M. D., C. P. H	Maryville	Do.
Pettis	W. L. Bradford, M. D	Sedalia	Do.
Polk	Gervais Smith, M. D	Bolivar	Do.
St. Francois	Bradford Massey, M. D	Flat River	Do.
St. Louis	Wm. F. O'Malley, M. D	Clayton	Do.
Montana:			
Cascade	W. H. Pickett, M. D., D. P. H	Great Falls	Do.
Lewis and Clark	Arthur Jordan, M. D	Helena	Do.
Missoula	F. D. Pease, M. D	Missoula	Do.
New Mexico·			
Bernalillo	J. R. Scott, M. D	Albuquerque	Do.
Chaves	J. A. Smith, M. D	Roswell	Do.
Colfax			Do.
Dona Ana	C. W. Gerber, M. D	Las Cruces	Do.
Eddy	W. W. Johnston, M. D	Carlsbad	Do.
McKinley			Do.
San Miguel			Do.
Santa Fe	H. P. Mera, M. D	Santa Fe	Do.
Union	C. H. Douthirt, M. D	Clayton	Do.
Valencia	G. W. Luckey, M. D	Los Lunas	Do.
New York:			
Cattaraugus	L. D. Bristol, M. D	Olean	District health officer.
North Carolina:			
Beaufort	J. W. Williams, M. D	Washington	Health officer.
Bertie	J. E. Smith, M. D	Windsor	Do.
Bladen	W. T. Ruark, M. D	Elizabethtown	Do.
Brunswick	R. E. Broadway, M. D	Southport	Do.
Buncombe	M. P. Moorer, M. D	Asheville	Do.
Cabarrus	S. E. Buchanan, M. D	Concord	Do.
Columbus	Floyd Johnson, M. D	Whiteville	Do.
Craven	D. E. Ford, M. D	New Bern	Do.
Cumberland	J. W. McNeill, M. D	Fayetteville	Do.
Davidson	G. C. Gambrell, M. D	Lexington	Do.
Durham	J. H. Epperson, Ph. D	Durham	Do.
Edgecombe	J. S. Hooker, M. D	Tarboro	Do.
Forsyth	J. R. Hege, M. D	Winston-Salem	Do.
Guilford	R. M. Bine, M. D	Greensboro	Do.
Granville	J. A. Morris, M. D	Oxford	Do.
Halifax	E. W. Larkin, M. D	Weldon	Do.
Henderson	J. S. Brown, M. D	Hendersonville	Do.
Hyde	Clyde Ruff, M. D	Swanquarter	Do.
Lenoir	R. S. McGeachy, M. D	Kinston	Do.
Mecklenburg	W. A. McPhaul, M. D	Charlotte	Do.
New Hanover	J. H. Hamilton, M. D	Wilmington	Do.
Northampton	Z. P. Mitchell, M. D	Jackson	Do.
Pamlico	D. A. Dees, M. D	Bayboro	Do.
Pitt	C. L. Outland, M. D	Greenville	Do.
Richmond	A. B. McCreary, M. D	Rockingham	Do.

County	Name of health officer	Post-office address	Official title
North Carolina—Con.			
Robeson	E. R. Hardin, M. D	Lumberton	Health officer.
Rowan	C. W. Armstrong, M. D	Salisbury	Do.
Rutherford	J. C. Twitty, M. D	Rutherfordton	Do.
Sampson	E. T. Hollingsworth, M. D	Clinton	Do.
Surry	R. M. Lancaster, M. D	Mount Airy	Do.
Vance	F. R. Harris, M. D	Henderson	Do.
Wake	A. C. Bulla, M. D	Raleigh	Do.
Wayne	L. W. Corbett, M. D	Goldsboro	Do.
Wilkes	J. W. White, M. D	Wilkesboro	Do.
Wilson	L. J. Smith, M. D	Wilson	Do.
Ohio:			
Allen	J. J. Sutter, M. D	Lima	District health commissioner.
Ashtabula	W. S. Weiss, M. D	Jefferson	Do.
Athens	J. M. Higgins, M. D	Athens	Do.
Belmont	F. R. Dew, M. D	St. Clairsville	Do.
Butler	C. J. Baldridge, M. D	Hamilton	Do.
Cleremont	F. A. Ireton, M. D	Batavia	Do.
Clinton	W. K. Ruble, M. D	Wilmington	Do.
Columbiana	T. T. Church, M. D	Lisbon	Do.
Coshocton	D. M. Criswell, M. D	Coshocton	Do.
Crawford	G. T. Wasson, M. D	Bucyrus	Do.
Cuyahoga	Robert Lockhart, M. D	Cleveland	Do.
Delaware	A. J. Pounds, M. D	Delaware	Do.
Erie	F. M. Houghtaling, M. D	Sandusky	Do.
Fayette	T. F. Myler, M. D	Washington Court House.	Do.
Franklin	C. M. Valentine, M. D	Columbus	Do.
Geauga	G. L. Lyne, M. D	Chardon	Do.
Hamilton	C. A. Neal, M. D	Cincinnati	Do.
Hancock	S. F. Whisler, M. D	Findlay	Do.
Hocking	W. G. Rhoten, M. D	Logan	Do.
Huron	B. C. Pilkey, M. D	Norwalk	Do.
Lake	Herbert Kenning, M. D	Painesville	Do.
Lorain	W. A. McIntosh, M. D	Oberlin	Do.
Lucas	F. F. DeVore, M. D	Toledo	Do.
Mahoning	J. F. Elder, M. D	Youngstown	Do.
Marion	N. Sifritt, M. D	Marion	Do.
Meigs	J. N. Gilliford, M. D	Pomeroy	Do.
Mercer	F. E. Ayers, M. D	Celina	Do.
Miami	P. J. Crawford, M. D	Troy	Do.
Montgomery	H. H. Pansing, M. D	Dayton	Do.
Morrow	R. L. Pierce, M. D	Mount Gilead	Do.
Muskingum	J. M. O'Neal, M. D	Zanesville	Do.
Paulding	C. E. Huston, M. D	Paulding	Do.
Perry	F. J. Crosbie, M. D	New Lexington	Do.
Richland	William DeKleine, M. D	Mansfield	Do.
Ross	G. E. Robbins, M. D	Chillicothe	Do.
Sandusky	O. H. Thomas, M. D	Fremont	Do.
Scioto	R. W. DeCrow, M. D	Wheelersburg	Do.
Seneca	H. L. S. Hinkley, M. D	Tiffin	Do.
Shelby	Arlington Ailes, M. D	Sidney	Do.
Stark	C. M. Peters, M. D	Canton	Do.
Summit	R. H. Markwith, M. D	Akron	Do.
Trumbull	L. A. Connell, M. D	Warren	Do.
Tuscarawas	J. Blickensderfer, M. D	New Philadelphia	Do.
Union	H. G. Southard, M. D	Marysville	Do.
Washington	A. G. Sturgiss, M. D	Marietta	Do.
Wayne	C. D. Barrett, M. D	Wooster	Do.
Wood	H. J. Powell, M. D	Bowling Green	Do.
Oklahoma:			
Carter	R. C. Sullivan, M. D	Ardmore	County superintendent of health.
Le Flore	W. F. Lunsford, M. D	Poteau	Do.
Muskogee	J. D. Leonard, M. D	Muskogee	Do.
Oklahoma	Geo. Hunter, M. D	Oklahoma City	Do.
Pittsburg	R. L. Cochran, M. D	McAlester	Do.
Oregon:			
Clackamas	F. W. Wallace, M. D	Oregon City	County health officer.
Coos	G. A. Burket, M. D	Coquille	Do.
Douglas	W. C. Belt, M. D	Roseburg	Do.
Jackson	W. P. Holt, M. D	Jacksonville	Do.
Klamath	G. S. Newsom, M. D	Klamath Falls	Do.
South Carolina:			
Aiken	C. H. Farmer, M. D	Aiken	Health officer.
Anderson	E. E. Epting, M. D	Anderson	Do.
Beaufort	T. R. Meyer, M. D	Beaufort	Do.
Charleston	Leon Banov, M. D	Charleston	Do.
Cherokee	W. H. Shealy, M. D	Gaffney	Do.
Colleton	L. W. Martin, M. D	Walterboro	Do.
Darlington	A. B. Hooton, M. D	Darlington	Do.
Dillon	R. G. Beachley, M. D	Dillon	Do.
Fairfield	Roderick MacDonald, M. D	Winnsboro	Do.
Georgetown	C. M. Moore, M. D	Georgetown	Do.

County	Name of health officer	Post-office address	Official title
South Carolina—Con.			
Greenville	Baylis Earle, M. D	Greenville	Health officer.
Marion	W. L. Poole, M. D	Marion	Do.
Newberry	H. G Callison, M. D	Newberry	Do.
Orangeburg	G. C. Bolin, M. D	Orangeburg	Do.
South Dakota:			
Brown	Geo. M Boteler, M. D	Aberdeen	County health officer.
Pennington	D. R. Jones, M. D	Rapid City	Superintendent county board of health.
Yankton	Thos. F. Ballard, M. D	Yankton	Do.
Tennessee:			
Blount	K. A. Bryant, M. D	Maryville	Field director.
Davidson	J. J. Lentz, M. D	Nashville	County health officer.
Gibson	F. L. Roberts, M. D	Trenton	Do.
Montgomery	F J. Malone, M. D	Clarksville	Field director.
Obion	J. W. Dennis, M. D	Union City	County health officer.
Roane	J C. Fly, M. D	Kingston	Do.
Rutherford	H. S Mustard, M. D	Murfreesboro	Director
Sevier	P. H. Muse, M D	Sevierville	County health officer.
Williamson	L M. Graves, M. D	Franklin	Do.
Texas:			
Falls	James Makins, M. D	Marlin	Director.
Hidalgo	J R Mahone, M. D	Pharr	Do.
Nueces	H. Garst, M. D	Corpus Christi	Do.
Tarrant	F P. Smith, M. D	Fort Worth	Do.
Utah:			
Davis	Sumner Gleason, M. D	Kaysville	Health officer.
Weber	H. E. Belnap, M D	Ogden	Do
Virginia:			
Accomac	A. D. Knott, M. D	Accomac	Do.
Albemarle	G. B. Young, M D	Charlottesville	Do.
Arlington	P. M. Chichester, M D	Clarendon	Do.
Augusta	H. M. Wallace, M. D	Staunton	Do
Brunswick	L H. Lewis, M. D	Lawrenceville	Do.
Carroll	James W. Smith	Hillsville	Sanitary officer.
Charlotte	L. E. Robbins	Charlotte	Do.
Chesterfield	M. D. Fuller	Petersburg	Do.
Fairfax	W. P. Caton, M. D	Fairfax	Health officer.
Greenville	R. A. Deal	Emporia	Sanitary officer.
Halifax	Kolbe Curtice	South Boston	Health officer.
Henrico	G. H. Musgrave, M. D	Richmond	Do
Henry	R. M. Wilson	Martinsville	Sanitary officer.
Isle of Wight	D. B. Lepper, M. D	Isle of Wight	Health officer.
James City	J. H. Crouch, M. D	Williamsburg	Do.
Northampton	J. R Horn, jr., M D	Eastville	Do
Nansemond	W. H. Newcomb, M. D	Suffolk	Do.
Prince Edward	J. E. Enders	Farmville	Sanitary officer.
Pulaski	J. L Johnson	Pulaski	Do.
Roanoke	L. B. St Clair	Roanoke	Do.
Smyth	J F. Ward	Marion	Do.
Washington	M. L. Hawley	Abingdon	Do.
Wise	W R. Culbertson, M. D	Norton	Health officer.
Washington:			
Chelan	Paul L West, M. D	Wenatchee	City and county health officer.
King	Geo. H. T. Sparling, M. D	Seattle	County health officer.
Spokane	T C. Barnhart, M D	Spokane	County health officer and physician.
Walla Walla	J. P. Kane, M. D	Walla Walla	City and county health officer.
Yakima	H. H. Smith, M. D	Yakima	Do.
West Virginia:			
Gilmer	E. O. Chimene, M. D	Glenville	Health officer
Hancock	Charles Koneig, M. D	New Cumberland	Do.
Harrison	V. A. Selby, M D	Clarksburg	Do.
Logan	M. P Link, M. D	Logan	Do.
Marion	L N. Yost, M. D	Fairmont	Do.
Marshall	A. P. Harrison, M. D	Moundsville	Do.
Preston	John Thames, M. D	Kingwood	Do.
Taylor	C. C. Hedges, M. D	Grafton	Do.
Wyoming:			
Natrona	R. J. Malott, M. D	Casper	County health officer

DEATH RATES IN A GROUP OF INSURED PERSONS

COMPARISON OF PRINCIPAL CAUSES OF DEATH, FEBRUARY AND MARCH, 1925 AND FIRST QUARTER OF 1923, 1924, AND 1925

The accompanying tables are taken from the Statistical Bulletin for April, 1925, published by the Metropolitan Life Insurance Co., and present the mortality experience of the industrial insurance department of the company for February and March, 1925, and for the first quarter of the years 1923, 1924, and 1925. The rates are based on a strength of approximately 16,000,000 insured persons.

The death rate of 10.3 per 1,000 for the month of March, 1925, establishes a record low rate for that month for this group of persons, and compares with 10.5 per 1,000 for March, 1924, with 12.2 for 1923, with 12.3 for 1922, and with 10.7 for 1921. Low mortality rates for several of the most important causes of death were the factors in bringing about this excellent health record; and the same factors were in operation in reducing to a new minimum the death rate for the first quarter of this year.

Death rates (annual basis) for principal causes per 100,000 lives exposed, February and March, 1925, and March and year, 1924

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Death rate per 100,000 lives exposed [1]			
	Mar., 1925	Feb., 1925	Mar., 1924	Year 1924 [2]
Total, all causes	1,025.6	1,007.6	1,047.4	907.5
Typhoid fever	2.4	2.6	2.2	4.4
Measles	3.4	2.1	14.3	7.2
Scarlet fever	6.1	4.2	4.9	4.4
Whooping cough	6.9	6.9	9.3	7.4
Diphtheria	11.5	11.6	15.7	13.2
Influenza	47.7	32.7	30.5	16.0
Tuberculosis (all forms)	113.4	103.2	115.2	104.5
Tuberculosis of respiratory system	99.3	92.1	104.0	92.6
Cancer	69.9	70.7	70.3	70.4
Diabetes mellitus	17.9	16.7	17.0	14.9
Cerebral hemorrhage	58.3	61.2	69.5	60.2
Organic diseases of heart	146.1	145.3	139.6	123.7
Pneumonia (all forms)	140.4	137.1	154.5	88.8
Other respiratory diseases	18.7	17.8	16.8	13.9
Diarrhea and enteritis	16.9	19.0	18.4	32.2
Bright's disease (chronic nephritis)	76.8	83.0	77.2	65.5
Puerperal state	19.2	18.4	17.5	16.8
Suicides	7.7	7.2	6.4	7.2
Homicides	6.5	6.0	6.4	7.1
Other external causes (excluding suicides and homicides)	52.5	55.3	51.6	62.7
Traumatism by automobile	14.0	8.1	8.9	15.7
All other causes	203.3	207.0	210.1	187.0

[1] All figures include infants insured under 1 year of age.
[2] Based on provisional estimate of lives exposed to risk in 1924.

FIRST QUARTER OF 1925

The Bulletin states:

Health conditions among the industrial populations of the United States and Canada were never so favorable during the first quarter of any year as they have been during that period of 1925. This is clearly indicated by the death rate among the more than 16,000,000 industrial policyholders of the Metropolitan Life Insurance Co., which was 9.9 per 1,000 during this period.

The improvement in 1925 as compared with the winter months of 1924, however, is confined to the white policy holders. Among the colored the mortality exceeded slightly the figure for last year.

The factors chiefly instrumental in establishing this splendid record are shown clearly in the table. The most important item is the further decline in the tuberculosis rate among both the white and colored policyholders. * * * The four principal communicable diseases of childhood likewise showed marked improvement without a single exception. Diphtheria (which causes almost as many deaths as the other three combined) dropped 31 per cent in its rate as compared with last year. Deaths from measles totaled less than one-quarter of the record for the early months of 1924. Scarlet fever and whooping cough registered substantial declines.

Other diseases for which the record is better are cancer, cerebral hemorrhage, pneumonia, puerperal conditions, and accidents.

There are, nevertheless, a few causes which show higher death rates than during the winter of 1924. The mortality from heart disease has registered an increase among both the white and colored; chronic nephritis has run slightly higher among the whites, with a considerable increase among the colored. Deaths from influenza have been much more frequent this year than last. This does not mean that the situation was in any way serious. The disease did not prevail, by and large, in virulent form. The death rate was less than one-half that for the corresponding quarter of 1923 and much lower than in 1922. Suicides have been more frequent this year than last, and more homicides have occurred among the white policyholders.

The diabetes situation is not as favorable as it was a few months ago. In the first part of 1924 there was recorded a marked drop in the diabetes death rate coincident with the more general use of insulin. This drop followed a period in which the mortality from that disease had been showing a rising tendency. Beginning with July, 1924, however, we began to register higher death rates than were recorded during the corresponding months of 1923. This has continued during most of the succeeding months. During the first quarter of 1925 there was recorded a slight increase in the diabetes death rate among whites and a considerable increase among the colored as compared with last year. It is yet too early to determine just what this reversal in the diabetes death rate means.

Death rates (annual basis) per 100,000 persons exposed, first quarter of 1923, 1924, and 1925, compared for white and colored policyholders

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Death rate per 100,000 persons exposed					
	White			Colored		
	January-March, 1925	January-March, 1924	January-March, 1923	January-March, 1925	January-March, 1924	January-March, 1923
All causes of death	908.3	929.2	1,041.7	1,632.7	1,593.9	1,656.9
Typhoid fever	2.8	2.4	2.9	5.7	4.2	6.3
Measles	3.0	14.1	11.7	1.3	5.8	7.8
Scarlet fever	5.9	6.8	6.8	.8	.4	.7
Whooping cough	6.1	7.4	5.8	10.9	11.6	8.2
Diphtheria and croup	14.1	20.6	28.8	5.9	6.2	8.2
Influenza	32.4	21.8	71.8	76.8	60.6	135.6
Meningococcus meningitis	.8	.9	.7	1.0	1.6	1.0
Tuberculosis (all forms)	88.5	94.2	106.3	231.8	248.0	245.6
Tuberculosis of respiratory system	78.0	84.1	98.3	207.0	227.8	227.0
Tuberculosis of the meninges, etc	4.9	5.6	3.7	7.3	6.9	5.8
Other forms of tuberculosis	5.6	4.5	4.3	17.4	13.4	12.8
Cancer	70.9	71.2	72.7	70.9	77.3	67.6
Diabetes	17.8	17.0	22.0	19.3	14.3	17.0
Cerebral heomrrhage; apoplexy	55.3	63.3	70.2	99.2	106.3	109.0
Organic diseases of the heart	132.9	126.8	153.8	236.4	213.1	233.0
Total respiratory diseases	133.5	136.0	154.9	266.6	265.2	267.2
Bronchitis	6.9	6.7	8.8	10.9	8.9	11.9
Bronchopneumonia	50.9	56.6	48.5	80.1	88.3	62.3
Pneumonia—lobar and undefined	66.8	63.2	86.5	157.7	155.3	178.3
Other diseases of respiratory system	8.9	9.6	11.2	17.8	12.7	14.8
Diarrhea and enteritis	17.2	19.5	5.7	23.7	15.2	8.0
Under 2 years	14.3	16.3	2.5	16.6	9.6	1.2
2 years and over	2.9	3.2	3.3	7.1	5.6	6.8
Acute nephritis	5.0	5.4	5.7	16.2	16.9	14.5
Chronic nephritis	69.1	68.0	77.4	131.9	118.3	120.9
Total puerperal state	16.8	17.8	20.1	26.6	29.6	22.3
Puerperal septicemia	6.5	7.1	7.4	12.0	12.0	8.0
Puerperal albuminuria and convulsions	3.4	4.1	4.3	4.4	7.8	6.1
Other diseases of puerperal state	6.9	6.5	8.3	10.3	9.8	8.2
Total external causes	65.2	65.5	64.2	104.0	107.9	102.9
Suicides	7.3	6.6	7.6	4.2	3.6	4.4
Homicides	3.2	2.5	3.2	31.9	33.4	29.6
Accidental and unspecified violence	54.6	56.3	53.4	68.0	70.9	69.0
Accidental drowning	1.6	3.3	2.3	2.1	2.2	1.2
Automobile accidents	11.7	11.8	10.2	9.0	9.6	10.2
All other and ill-defined causes of death	171.1	170.5	165.3	303.7	291.3	281.0

DEATHS DURING WEEK ENDED MAY 2, 1925

Summary of information received by telegraph from industrial insurance companies for week ended May 2, 1925, and corresponding week of 1924. (From the Weekly Health Index, May 6, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 2, 1925	Corresponding week, 1924
Policies in force	59,640,913	55,860,937
Number of death claims	12,172	11,636
Death claims per 1,000 policies in force, annual rate	10.6	10.9

Deaths from all causes in certain large cities of the United States during the week ended May 2, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, May 6, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended May 2, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended May 2, 1925 [2]
	Total deaths	Death rate [1]		Week ended May 2, 1925	Corresponding week, 1924	
Total (64 cities)	7,185	13.6	[3] 13.8	776	[3] 860	
Akron	45			4	6	44
Albany [4]	41	17.9	13.6	0	3	0
Atlanta	68	15.3	19.2	6	14	
Baltimore [4]	237	15.5	16.8	24	24	70
Birmingham	78	19.8	20.8	13	5	
Boston	235	15.6	16.4	30	27	79
Bridgeport	29			4	3	64
Buffalo	157	14.8	15.5	18	28	73
Cambridge	43	19.9	14.9	7	3	120
Camden	32	13.0	16.5	1	8	16
Chicago [4]	725	12.6	12.8	84	96	74
Cincinnati	126	16.1	13.9	14	5	83
Cleveland	205	11.4	11.8	32	40	79
Columbus	59	11.2	11.5	5	4	47
Dallas	50	13.5	15.8	7	5	
Dayton	41	12.4	12.9	3	4	48
Denver	86			8	6	
Des Moines	30	10.5	10.4	1	2	17
Detroit	281			55	50	93
Duluth	26	12.3	11.1	2	2	42
Erie	25			1	2	20
Fall River [4]	36	15.5	15.5	3	6	43
Flint	13			1	5	16
Fort Worth	32	10.9	8.1	3	1	
Grand Rapids	27	9.3	7.4	1	2	16
Houston	52			10	5	
Indianapolis	99	14.4	13.7	10	7	69
Jacksonville, Fla	32	15.9	14.2	5	3	111
Jersey City	69	11.4	15.0	9	14	63
Kansas City, Kans	33	13.9	8.6	5	2	105
Kansas City, Mo	85	12.1	13.9	5	9	
Los Angeles	218			21	31	58
Louisville	67	13.5	13.5	6	8	52
Lowell	42	18.8	13.1	6	4	104
Lynn	25	12.5	11.6	6	4	159
Memphis	63	18.8	25.1	6	10	
Milwaukee	120	12.5	11.1	24	23	110
Minneapolis	91	11.2	12.5	9	12	48
Nashville [4]	46	19.3	17.7	6	3	
New Bedford	29	11.2	11.8	4	8	66
New Haven	39	11.4	11.0	3	3	39
New Orleans	137	17.2	18.5	17	18	
New York	1,578	13.5	12.5	172	184	69
Bronx Borough	170	9.8	9.3	9	14	31
Brooklyn Borough	534	12.5	11.9	65	73	68
Manhattan Borough	699	16.1	14.5	82	85	82
Queens Borough	127	11.5	11.0	13	10	65
Richmond Borough	48	18.7	14.8	3	2	54
Newark, N. J	103	11.9	14.2	8	17	36
Norfolk	37	11.4	9.2	1	3	18
Oakland	54	11.1	11.0	9	9	105
Oklahoma City	15			1	2	
Omaha	52	12.8	12.3	4	7	30
Paterson	27	9.9	12.6	6	4	101
Philadelphia	521	13.7	15.3	50	48	63
Pittsburgh	221	18.2	18.3	24	30	84
Portland, Oreg	65	12.0	10.7	5	8	52
Providence	60	12.8	17.8	5	16	40
Richmond	56	15.7	17.3	6	3	73
Rochester	79	12.4		10		79
St. Louis	220	14.0	14.2	11	17	
St. Paul	71	15.0	14.5	6	6	51
Salt Lake City [4]	29	11.6	13.0	1	7	16
San Antonio	41	10.8	18.5	9	18	

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 62 cities.
[4] Deaths for week ended Friday, May 1, 1925.

Deaths from all causes in certain large cities of the United States during the week ended May 2, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, May 6, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended May 2, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended May 2, 1925
	Total deaths	Death rate		Week ended May 2, 1925	Corresponding week, 1924	
San Francisco	151	14.1	12.6	9	7	52
Schenectady	17	8.7	8.8	5	0	141
Seattle	91			5	5	51
Somerville	15	7.7	13.5	0	1	0
Spokane	25			0	3	0
Springfield, Mass	38	13.0	11.9	6	3	89
Syracuse	51	13.9	16.9	3	10	38
Tacoma	29	14.5	14.2	2	6	48
Toledo	66	12.0	13.2	8	12	72
Trenton	32	12.6	16.9	1	2	16
Utica	37	18.0		9		185
Washington, D. C	141	14.8	16.0	13	12	73
Waterbury	16			3	1	66
Wilmington, Del	27	11.5	10.0	2	7	46
Worcester	62	16.3	11.2	5	7	58
Yonkers	22	10.3	10.5	0	4	0
Youngstown	58	18.9	13.4	11	5	139

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended May 9, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	1
Chicken pox	34
Diphtheria	6
Dysentery	56
Influenza	127
Malaria	47
Measles	14
Mumps	28
Ophthalmia neonatorum	1
Pellagra	22
Pneumonia	68
Poliomyelitis	1
Scarlet fever	27
Smallpox	105
Tetanus	2
Trachoma	2
Tuberculosis	130
Typhoid fever	15
Whooping cough	34

ARIZONA

	Cases
Chicken pox	3
Measles	27
Mumps	3
Scarlet fever	5
Tuberculosis	4
Typhoid fever	1
Whooping cough	13

ARKANSAS

	Cases
Chicken pox	12
Diphtheria	3
Hookworm disease	2
Influenza	40
Malaria	36
Measles	37
Mumps	20
Pellagra	24
Scarlet fever	3
Smallpox	12
Trachoma	3
Tuberculosis	9
Typhoid fever	5
Whooping cough	6

CALIFORNIA

	Cases
Cerebrospinal meningitis:	
Kings County	1
San Francisco	1
Taft	1
Diphtheria	94
Influenza	37
Jaundice (epidemic)—Tulare County	1
Leprosy—Los Angeles	1
Measles	54
Poliomyelitis:	
Long Beach	1
Modesto	1
Oakland	1
Rocky Mountain spotted fever—Lassen County	1
Scarlet fever	144
Smallpox:	
Los Angeles	27
Oakland	17
San Diego	18
Scattering	70
Typhoid fever	5

COLORADO

(Exclusive of Denver)

	Cases
Chicken pox	27
Diphtheria	15
Measles	4
Mumps	12
Pneumonia	12
Scarlet fever	8
Tuberculosis	34
Typhoid fever	2
Vincent's angina	1
Whooping cough	8

CONNECTICUT

	Cases
Cerebrospinal meningitis	2
Chicken pox	41
Conjunctivitis (infectious)	24
Diphtheria	19
German measles	36
Influenza	7

CONNECTICUT—continued

	Cases
Lethargic encephalitis	2
Measles	116
Mumps	9
Paratyphoid fever	4
Pneumonia (all forms)	45
Scarlet fever	96
Tuberculosis (all forms)	18
Typhoid fever	4
Whooping cough	118

DELAWARE

Diphtheria	4
Measles	3
Scarlet fever	7
Tuberculosis	1
Typhoid fever	1

FLORIDA

Chicken pox	12
Diphtheria	5
Malaria	9
Mumps	23
Pneumonia	1
Poliomyelitis	2
Scarlet fever	4
Smallpox	6
Tuberculosis	14
Typhoid fever	15
Whooping cough	1

GEORGIA

Cerebrospinal meningitis	1
Chicken pox	44
Conjunctivitis	2
Diphtheria	5
Dysentery	53
German measles	1
Hookworm disease	6
Influenza	110
Malaria	33
Measles	21
Mumps	69
Pellagra	15
Pneumonia	52
Scarlet fever	6
Septic sore throat	7
Smallpox	20
Tuberculosis	28
Typhoid fever	19
Whooping cough	54

ILLINOIS

Cerebrospinal meningitis:	
Cook County	4
La Salle County	1
Diphtheria:	
Cook County	65
Scattering	28
Influenza	87
Lethargic encephalitis:	
Coles County	1
Fulton County	2
Measles	1,552
Pneumonia	352

ILLINOIS—continued

	Cases
Scarlet fever:	
Cook County	235
Kane County	13
McLean County	15
Peoria County	12
Scattering	102
Smallpox	32
Tuberculosis	309
Typhoid fever	17
Whooping cough	301

INDIANA

Chicken pox	58
Diphtheria	14
Influenza	27
Measles	125
Mumps	3
Pneumonia	6
Poliomyelitis	1
Scarlet fever	195
Smallpox	97
Tuberculosis	47
Typhoid fever	10
Whooping cough	63

IOWA

Diphtheria	11
Scarlet fever	23
Smallpox	8

KANSAS

Chicken pox	69
Diphtheria	11
German measles	6
Influenza	17
Measles	6
Mumps	158
Pneumonia	21
Scarlet fever	72
Tuberculosis	59
Typhoid fever	1
Whooping cough	45

LOUISIANA

Diphtheria	11
Influenza	74
Leprosy	1
Malaria	14
Pneumonia	59
Scarlet fever	14
Smallpox	7
Tuberculosis	45
Typhoid fever	38
Whooping cough	19

MAINE

Chicken pox	10
Diphtheria	2
German measles	3
Influenza	178
Measles	3
Mumps	68
Pneumonia	7
Scarlet fever	10
Septic sore throat	3
Tuberculosis	5
Typhoid fever	4
Whooping cough	1

MARYLAND [1]

	Cases
Cerebrospinal meningitis	1
Chicken pox	121
Diphtheria	18
German measles	2
Influenza	27
Lethargic encephalitis	1
Malaria	1
Measles	41
Mumps	78
Pneumonia (all forms)	82
Poliomyelitis	1
Scarlet fever	42
Septic sore throat	1
Smallpox	3
Tetanus	1
Tuberculosis	51
Typhoid fever	2
Vincent's angina	2
Whooping cough	103

MASSACHUSETTS

Cerebrospinal meningitis	5
Chicken pox	133
Conjunctivitis (suppurative)	12
Diphtheria	76
German measles	247
Hookworm disease	1
Influenza	66
Lethargic encephalitis	5
Measles	1,101
Mumps	106
Ophthalmia neonatorum	16
Pneumonia (lobar)	119
Poliomyelitis	1
Scarlet fever	249
Septic sore throat	5
Smallpox	1
Trachoma	2
Tuberculosis (all forms)	137
Typhoid fever	3
Whooping cough	176

MICHIGAN

Diphtheria	64
Measles	457
Pneumonia	143
Scarlet fever	323
Smallpox	12
Tuberculosis	52
Typhoid fever	6
Whooping cough	173

MINNESOTA

Chicken pox	86
Diphtheria	73
Influenza	5
Measles	35
Pneumonia	4
Scarlet fever	217
Smallpox	15
Tuberculosis	47
Typhoid fever	2
Whooping cough	30

MISSISSIPPI

Diphtheria	5
Scarlet fever	2
Smallpox	18
Typhoid fever	27

[1] Week ended Friday.

MISSOURI

(Exclusive of Kansas City)

	Cases
Chicken pox	55
Diphtheria	86
Influenza	8
Malaria	19
Measles	20
Mumps	84
Pneumonia	11
Scarlet fever	151
Septic sore throat	4
Smallpox	11
Tetanus	2
Trachoma	89
Tuberculosis	68
Typhoid fever	5
Whooping cough	27

MONTANA

Chicken pox	7
Diphtheria	6
German measles	60
Measles	22
Mumps	9
Rocky Mountain spotted fever.	
Miles City	1
Missoula R. F. D	1
Rosebud	1
Thurland	1
Scarlet fever	38
Septic sore throat	1
Smallpox	16
Tuberculosis	3
Whooping cough	7

NEW JERSEY

Cerebrospinal meningitis	1
Chicken pox	147
Diphtheria	78
Influenza	7
Measles	529
Pneumonia	122
Poliomyelitis	2
Scarlet fever	249
Smallpox	12
Typhoid fever	7
Whooping cough	222

NEW MEXICO

Chicken pox	5
Diphtheria	1
Measles	16
Mumps	12
Pneumonia	1
Scarlet fever	6
Trachoma	1
Tuberculosis	9
Whooping cough	9

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	2
Diphtheria	120
Influenza	64
Lethargic encephalitis	4
Measles	715
Pneumonia	324
Poliomyelitis	2
Scarlet fever	329
Smallpox	4
Typhoid fever	12
Whooping cough	231

NORTH CAROLINA

	Cases
Cerebrospinal meningitis	1
Chicken pox	64
Diphtheria	15
German measles	3
Lethargic encephalitis	1
Measles	19
Scarlet fever	16
Septic sore throat	1
Smallpox	70
Typhoid fever	6
Whooping cough	85

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

	Cases
Chicken pox	7
Diphtheria	8
Influenza	90
Scarlet fever	10
Smallpox	9
Typhoid fever	4
Whooping cough	9

OREGON

	Cases
Cerebrospinal meningitis	1
Chicken pox	34
Diphtheria:	
Portland	16
Scattering	9
Influenza	24
Measles	3
Mumps	19
Pneumonia	[1] 11
Scarlet fever:	
Portland	10
Clackamas County	8
Scattering	21
Smallpox	12
Tuberculosis	19
Typhoid fever	2
Whooping cough	23

SOUTH DAKOTA

	Cases
Chicken pox	2
Diphtheria	6
Influenza	5
Measles	1
Pneumonia	18
Scarlet fever	47
Smallpox	5

TEXAS

	Cases
Cerebrospinal meningitis	2
Chicken pox	108
Diphtheria	23
Dysentery (epidemic)	16
Influenza	59
Leprosy	2
Measles	53
Mumps	103
Paratyphoid fever	1
Pellagra	15
Pneumonia	18
Scarlet fever	35

[1] Deaths

TEXAS—continued

	Cases
Smallpox	53
Trachoma	2
Tuberculosis	14
Typhoid fever	4
Whooping cough	48

VIRGINIA

	Cases
Smallpox:	
Grayson County	2
Isle of Wight County	1
Nansemond County	1
Petersburg	1

WASHINGTON

	Cases
Chicken pox	87
Diphtheria	22
German measles	38
Lethargic encephalitis—Chelan County	1
Measles	2
Mumps	120
Pneumonia	1
Rocky Mountain spotted fever—Lincoln County	1
Scarlet fever	44
Smallpox	60
Tuberculosis	47
Typhoid fever	3
Whooping cough	127

WEST VIRGINIA

	Cases
Diphtheria	4
Scarlet fever	130
Smallpox	12
Typhoid fever	5

WISCONSIN

	Cases
Milwaukee	
Chicken pox	42
Diphtheria	10
German measles	134
Influenza	1
Measles	241
Mumps	82
Ophthalmia neonatorum	1
Pneumonia	23
Scarlet fever	21
Smallpox	31
Tuberculosis	26
Whooping cough	22
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	96
Diphtheria	16
German measles	332
Influenza	299
Measles	184
Mumps	199
Ophthalmia neonatorum	2
Pneumonia	27
Scarlet fever	104
Smallpox	13
Tuberculosis	21
Typhoid fever	2
Whooping cough	87

Reports for Week Ended May 2, 1925

DISTRICT OF COLUMBIA

	Cases
Chicken pox	21
Diphtheria	11
Influenza	1
Measles	55
Pneumonia	38
Scarlet fever	21
Smallpox	2
Tuberculosis	34
Typhoid fever	3
Whooping cough	23

FLORIDA

	Cases
Cerebrospinal meningitis	1
Chicken pox	21
Diphtheria	9
Influenza	3
Malaria	8
Measles	4
Mumps	81
Pneumonia	4
Scarlet fever	5
Smallpox	14
Tetanus	1
Tuberculosis	29
Typhoid fever	11
Whooping cough	7

NEBRASKA

	Cases
Chicken pox	27
Diphtheria	8
Influenza	5
Measles	3
Mumps	24
Scarlet fever	11
Smallpox	35
Tuberculosis	4
Whooping cough	9

NORTH DAKOTA

	Cases
Chicken pox	7
Diphtheria	4
German measles	3
Influenza	4
Measles	2
Mumps	10
Pneumonia	8
Poliomyelitis	1
Scarlet fever	50
Smallpox	5
Tuberculosis	2
Whooping cough	28

SUMMARY OF MONTHLY REPORTS FROM STATES [1]

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
February, 1925										
Iowa	1	81			11			187	90	3
March, 1925										
District of Columbia	1	50	4		124	0	1	132	7	6
Georgia		64	4,777	95	113	19		25	48	21
Hawaii	3	29	149		122			4		7
Illinois	8	430	763		4,615		1	2,384	220	62
Minnesota	4	313	8		176		3	1,104	117	26
New York	20	1,402	1,177	3	2,640		10	8,155	34	95
April, 1925										
Arizona		14	57		171			36	5	2
Connecticut	4	138	71		780		3	480	2	11
District of Columbia	1	31	7		194	0	1	106	26	4
Michigan		307	70		1,039	1	4	1,605	93	38
North Dakota		19	23		16		1	136	33	1

[1] The monthly reports published in Public Health Reports for March 27, 1925, page 618, stated as for January, 1925, were summaries of February reports.

Number of Cases of Certain Communicable Diseases Reported for the Month of February, 1925, by State Health Officers

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	211	60	196	304	82	884	176	47	140
Arizona	36	21	185	77	35	22	79	7	8
Arkansas	182	50	110	195	89	77	[1] 36	31	55
California	1,662	542	186	824	618	704	804	27	721
Colorado	320	97	19	467	174	1	131	11	30
Connecticut	349	202	275	170	725		113	14	197
Delaware	13	10	2	15	30		[1] 44	6	6
District of Columbia	113	83	40		148	3	124	6	44
Florida	18	34	12	103	15	8	72	41	21
Georgia	202	70	12	328	34	61	[1] 139	41	144
Idaho		23			31			7	
Illinois	1,383	457	2,664	1,375	2,099	298	1,182	71	1,048
Indiana		174			892			20	
Iowa [2]									
Kansas	565	191	32	1,767	468	30	154	11	102
Kentucky [3]									
Louisiana	61	94	9	1	62	110	[1] 102	75	25
Maine	196	23	19	669	75		58	12	32
Maryland	347	164	262	268	445		219	27	405
Massachusetts	931	497	2,204	453	1,462		598	33	602
Michigan	689	299	692	339	1,366	62	535	31	440
Minnesota	543	395	134		998	201	167	29	132
Mississippi	1,180	57	417	2,429	30	244	287	126	633
Missouri	372	325	63	316	1,557	94	246	9	121
Montana	70	32	107	60	122	62	62	7	49
Nebraska		41			112			11	
New Hampshire [4]									
New Jersey	700	410	614		1,281	19	456	26	886
New Mexico	82	29	65	49	18	1	56	5	8
New York	2,055	1,220	1,577	1,358	2,870	54	1,424	147	1,395
North Carolina	640	140	96		124	329		4	345
North Dakota	143	64	4	60	236	15	7	6	49
Ohio	1,437	421	560	748	2,136	550	606	49	547
Oklahoma	192	104	42	89	155	179	181	50	158
Oregon	102	101	17	75	115	114	68	15	38
Pennsylvania	2,199	930	3,195	2,852	2,878	25	536	69	979
Rhode Island		73			140			1	
South Carolina	23	235	4	92	7	79	9	7	25
South Dakota	61	25	6	2	188	40	7	7	17
Tennessee	454	78	231	3	188	485	218	47	193
Texas [3]									
Utah	473	39	39	77	62	18	[1] 10	1	232
Vermont	252	17	29	322	75		[1] 15	3	142
Virginia	728	152	507		195	22	[1] 226	27	894
Washington	535	211	39	662	201	262	126	20	155
West Virginia	190	92	149		133	123	42	92	189
Wisconsin	913	165	1,886	1,142	661	217	134	8	402
Wyoming	43	12	8	27	30	5	[1] 1	8	

[1] Pulmonary.
[2] Reports not received at time of going to press.
[3] Reports received weekly.
[4] Reports received annually.

Case Rates per 1,000 Population (Annual Basis) for the Month of February, 1925

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	1.11	0.32	1.04	1.61	0.43	4.67	0.93	0.25	0.74
Arizona	1.15	.67	5.92	2.46	1.12	.70	2.53	.22	.26
Arkansas	1.28	.35	.77	1.37	.63	.54	[1] .25	.22	.39
California	5.39	1.76	.60	2.67	2.00	2.28	2.61	.09	2.34
Colorado	4.09	1.24	.24	5.97	2.23	.01	1.68	.14	.38
Connecticut	2.97	1.72	2.34	1.45	6.17		.96	.12	1.68
Delaware	.72	.56	.11	.83	1.67		[1] 2.44	.33	.33
District of Columbia	2.96	2.17	1.05		3.87	.08	3.25	.16	1.15
Florida	.22	.41	.14	1.23	.18	.10	.86	.49	.25
Georgia	.86	.30	.05	1.40	.14	.26	[1] .59	.17	.61
Idaho		.61			.82			.19	
Illinois	2.59	.86	4.99	2.57	3.93	.56	2.21	.13	1.96
Indiana		.74			3.80			.09	
Iowa [2]									
Kansas	4.06	1.37	.23	12.70	3.36	.22	1.11	.08	.73
Kentucky [2]									
Louisiana	.42	.65	.06	.01	.43	.76	[1] .71	.52	.17
Maine	3.26	.38	.32	11.14	1.25		.97	.20	.53
Maryland	2.94	1.39	2.22	2.27	3.77		1.86	.23	3.43
Massachusetts	2.94	1.57	6.96	1.43	4.62		1.89	.10	1.90
Michigan	2.16	.94	2.17	1.06	4.29	.19	1.68	.10	1.38
Minnesota	2.76	2.01	.68		5.07	1.02	.85	.15	.67
Mississippi	8.59	.41	3.04	17.68	.22	1.78	2.09	.92	4.61
Missouri	1.40	1.22	.24	1.19	5.85	.35	.92	.03	.45
Montana	1.41	.64	2.16	1.21	2.46	1.25	1.25	.14	.99
Nebraska		.39			1.08			.11	
Nevada									
New Hampshire [4]									
New Jersey	2.60	1.52	2.28		4.76	.07	1.70	.10	3.29
New Mexico	2.82	1.00	2.24	1.69	.62	.03	1.93	.17	.28
New York	2.41	1.43	1.85	1.59	3.37	.06	1.67	.17	1.64
North Carolina	3.02	.66	.45		.59	1.55		.02	1.63
North Dakota	2.72	1.22	.08	1.14	4.48	.28	.13	.11	.93
Ohio	2.96	.87	1.15	1.54	4.40	1.13	1.25	.10	1.13
Oklahoma	1.12	.61	.24	.52	.90	1.04	1.05	.29	.92
Oregon	1.57	1.56	.26	1.16	1.77	1.76	1.05	.23	.59
Pennsylvania	3.08	1.30	4.47	3.09	4.03	.03	.75	.10	1.37
Rhode Island		1.49			2.85			.02	
South Carolina	.17	1.72	.03	.67	.05	.58	.07	.05	.18
South Dakota	1.19	.49	.12	.04	3.68	.78	.14	.14	.33
Tennessee	2.44	.42	1.24	.02	1.01	2.61	1.17	.25	1.04
Texas [3]									
Utah	12.52	1.03	1.03	2.04	1.64	.48	[1] .26	.03	6.14
Vermont	9.32	.63	1.07	11.91	2.77		[1] .55	.11	5.25
Virginia	3.87	.81	2.70		1.04	.12	[1] 1.20	.14	4.76
Washington	4.72	1.86	.34	5.84	1.77	2.31	1.11	.18	1.37
West Virginia	1.55	.75	1.21		1.08	1.00	.34	.75	1.54
Wisconsin	4.25	.77	8.78	5.31	3.08	1.01	.62	.04	1.87
Wyoming	2.53	.71	.47	1.59	1.76	.29	.06	.47	

[1] Pulmonary.
[2] Reports not received at time of going to press.
[3] Reports received weekly.
[4] Reports received annually.

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended April 25, 1925:

Los Angeles, Calif.

Week ended Apr. 25, 1925:

Number of rats examined	4,903
Number of rats found to be plague infected	3
Number of squirrels examined	1,304
Number of squirrels found to be plague infected	0

Totals, Nov. 5, 1924, to Apr. 25, 1925:

Number of rats examined	90,874
Number of rats found to be plague infected	180
Number of squirrels examined	9,922
Number of squirrels found to be plague infected	9

Date of discovery of last plague-infected rodent, Apr. 28, 1925.

Date of last human case, Jan. 15, 1925.

Oakland, Calif.

(Including other East Bay communities)

Week ended Apr. 25, 1925:	
Number of rats trapped	2,399
Number of rats found to be plague infected	0
Totals, Jan. 1 to Apr. 25, 1925:	
Number of rats trapped	40,293
Number of rats found to be plague infected	21

Date of discovery of last plague-infected rat, Mar. 4, 1925.
Date of last human case, Sept. 10, 1919.

New Orleans, La.

Week ended Apr. 25, 1925:	
Number of vessels inspected	300
Number of inspections made	920
Number of vessels fumigated with cyanide gas	31
Number of rodents examined for plague	5,381
Number of rodents found to be plague infected	0
Totals, Dec. 5, 1924, to Apr. 25, 1925:	
Number of rodents examined for plague	85,619
Number of rodents found to be plague infected	12

Date of discovery of last plague-infected rat, Jan. 17, 1925.
Date of last human case occurring in New Orleans, Aug. 20, 1920.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended April 25, 1925, 35 States reported 1,212 cases of diphtheria. For the week ended April 26, 1924, the same States reported 1,597 cases of this disease. One hundred cities, situated in all parts of the country and having an aggregate population of more than 28,700,000, reported 893 cases of diphtheria for the week ended April 25, 1925. Last year, for the corresponding week, they reported 984 cases. The estimated expectancy for these cities was 931 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty-two States reported 5,315 cases of measles for the week ended April 25, 1925, and 13,546 cases of this disease for the week ended April 26, 1924. One hundred cities reported 3,558 cases of measles for the week this year, and 5,171 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 34 States—this year, 3,293 cases; last year, 3,372; 100 cities—this year, 1,980; last year, 1,522; estimated expectancy, 1,009 cases.

Smallpox.—For the week ended April 25, 1925, 35 States reported 909 cases of smallpox. Last year, for the corresponding week, they reported 1,427 cases of smallpox. One hundred cities reported smallpox for the week as follows: 1925, 342 cases; 1924, 568 cases; estimated expectancy, 103 cases. These cities reported 23 deaths from smallpox for the week this year.

Typhoid fever.—Two hundred and forty-four cases of typhoid fever were reported for the week ended April 25, 1925, by 34 States. For the corresponding week of 1924 the same States reported 184 cases. One hundred cities reported 90 cases of typhoid fever for the week this year and 64 cases for the corresponding week last year. The estimated expectancy for these cities was 54 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 100 cities as follows: 1925, 1,260 deaths; 1924, 1,024 deaths.

City reports for week ended April 25, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	6	1	0	1	1	1	39	3
New Hampshire:									
Concord	22,408	0	0	0	0	0	0	0	1
Manchester	81,383	0	2	0	0	0	5	0	1
Vermont:									
Barre	[1] 10,008	1	0	0	0	0	1	3	0
Burlington	23,613	3	1	0	0	0	16	17	0
Massachusetts:									
Boston	770,400	--------	56	34	2	1	402	--------	31
Fall River	120,912	2	3	1	2	2	3	0	4
Springfield	144,227	7	3	1	1	2	18	3	1
Worcester	191,927	15	4	4	3	0	9	0	9
Rhode Island:									
Pawtucket	68,799	--------	1	3	0	0	0	--------	3
Providence	242,378	0	12	8	3	2	1	0	11
Connecticut:									
Bridgeport	[1] 143,555	1	6	3	4	0	1	0	5
Hartford	[1] 138,036	1	6	4	--------	3	7	1	3
New Haven	172,967	1	4	0	1	1	47	0	4
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	8	10	7	3	0	237	7	28
New York	5,927,625	179	248	221	66	22	135	32	272
Rochester	317,867	6	4	16	3	1	48	23	8
Syracuse	184,511	12	7	2	--------	2	10	15	4
New Jersey:									
Camden	124,157	8	3	7	0	0	70	2	2
Newark	438,699	38	17	13	11	0	56	12	16
Trenton	127,390	0	4	1	1	1	5	0	0
Pennsylvania:									
Philadelphia	1,922,788	102	68	139	--------	4	453	32	67
Pittsburgh	613,442	27	17	24	--------	3	416	11	43
Reading	110,917	8	3	1	0	0	115	8	1
Scranton	140,636	2	3	4	0	0	2	0	13

[1] Population Jan. 1, 1920.

City reports for week ended April 25, 1925—**Continued**

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL									
Ohio									
Cincinnati	406,312	18	7	7		15	2	5	20
Cleveland	888,519	72	22	27	7	4	11	11	35
Columbus	261,082	2	4	3		2	3	2	5
Toledo	268,338	8	3	4		6	92	1	6
Indiana									
Fort Wayne	93,573	2	2	0		1	12	0	3
Indianapolis	342,718		6	2	0	0	12		12
South Bend	76,709	5	1	0	0	0	2	0	4
Terre Haute	68,939	7	1	1		1	28	0	1
Illinois:									
Chicago	2,886,121	75	100	65	34	14	692	13	108
Cicero	55,968		2						
Springfield	61,833	9	1	0	0	0	9	54	3
Michigan									
Detroit	995,668	24	51	27	6	3	22	10	43
Flint	117,968	5	3	0	0	0	14	1	1
Grand Rapids	145,947	6	4	2		1	74	1	4
Wisconsin:									
Madison	42,519	3	0	0	0	0	8	44	1
Milwaukee	484,595	34	13	16	4	3	245	94	41
Racine	64,393	7	1	2	2	0	62	19	1
Superior	[1] 39,671	1	1	0	0	0	0	0	3
WEST NORTH CENTRAL									
Minnesota.									
Duluth	106,289	4	2	0		1	0	1	3
Minneapolis	409,125	28	14	23	6	6	5	8	12
St Paul	241,891	22	13	10		7	13	26	11
Iowa:									
Davenport	61,262	1	1	0	0		0	0	
Des Moines	140,923	0	2	0	0		2	0	
Sioux City	79,662	0	1	0	0		1	34	
Waterloo	39,667	13	0	0	0		0	2	
Missouri.									
Kansas City	351,819	10	6	4	7	7	8	17	15
St. Joseph	78,232	2	2	1		1	0	1	2
St. Louis	803,853	37	39	49	0	0	18	9	
North Dakota:									
Fargo	24,841		0						
Grand Forks	14,547	1	0	0	0		0	0	
South Dakota.									
Aberdeen	15,829	2		0	0		0	0	
Sioux Falls	29,206		1						
Nebraska:									
Lincoln	58,761	8	2	1	0	0	0	3	0
Omaha	204,382	11	4	1	0	0	0	0	16
Kansas:									
Topeka	52,555	14	1	2	1	0	1	54	0
Wichita	79,261	12	1	0	0	0	3	5	3
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	2	2	5	0	0	20	3	0
Maryland:									
Baltimore	773,580	84	22	26	19	4	12	74	39
Cumberland	32,361		1	0		1	0		2
Frederick	11,301	0	0	1	0	0	1	0	0
District of Columbia:									
Washington	[1] 437,571	0	9	8		5	51		10
Virginia:									
Lynchburg	30,277	4	0	2	0	0	1	21	0
Norfolk	159,089	12	0	1	0	0	3	100	4
Richmond	181,044	9	1	3		1	6	2	5
Roanoke	55,502	3	1	0		1	11	1	1
West Virginia:									
Charleston	45,597	0	0	1		1	32	2	1
Huntington	57,918	0	0	0	0		0	0	
Wheeling	[1] 56,208	1	1	0		1	5	0	1

[1] Population Jan. 1, 1920.

City reports for week ended April 25, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
SOUTH ATLANTIC—continued									
North Carolina:									
Raleigh	29,171	3	0	0	0	0	0	0	1
Wilmington	35,719	10	1	0	0	0	0	2	2
Winston-Salem	56,230	12	1	1	0	0	3	5	1
South Carolina:									
Charleston	71,245	0	0	0		1	0	1	2
Columbia	39,688	3	0	0	0	0	0	2	1
Greenville	25,789	2	0	1	0	0	0	0	1
Georgia:									
Atlanta	222,963	7	1	4	2	2	0	0	10
Brunswick	15,937	0	1	0	0	0	0	0	0
Savannah	89,448	0	1	0	4	4	0	5	4
Florida:									
St. Petersburg	24,403	0	1	0	0	0	0	0	0
Tampa	56,050	1	1	0	0	0	0	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	1	1		4	0	0	2
Louisville	257,671	2	5	5	4	0	4	0	17
Tennessee:									
Memphis	170,067	9	4	1		4	5	8	10
Nashville	121,128	4	0	0		4	24	0	6
Alabama:									
Birmingham	195,901	11	1	0	34	2	0	1	13
Mobile	63,858	1	0	0	0	1	0	0	2
Montgomery	45,383	3	0	0	1	0	0	9	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	1	1	0	0		0	4	
Little Rock	70,916	0	1	0	1	0	3	0	0
Louisiana:									
New Orleans	404,575	1	8	10	2	2	1	0	14
Shreveport	54,590	1		1		2	1	0	5
Oklahoma:									
Oklahoma	101,150	0	1	1	4	0	0	1	1
Texas:									
Dallas	177,274	31	3	4	0	0	2	0	3
Galveston	46,877	3	0	0	0	0	0	1	0
Houston	154,970	3	2	2	0	1	0	0	5
San Antonio	184,727	0	1	0	0	0	1	0	4
MOUNTAIN									
Montana:									
Billings	16,927	0	0	1	0	1	0	13	0
Great Falls	27,787	2	1	1	0	0	10	1	1
Helena	[1] 12,037		0						
Missoula	[1] 12,668	0	1	3	0	0	1	0	1
Idaho:									
Boise	22,806		0						
Colorado:									
Denver	272,031	16	11	18		7	8	78	14
Pueblo	43,519	3	2	3	0	0	1	3	3
New Mexico:									
Albuquerque	16,648	0	2	0	0	0	0	2	0
Utah:									
Salt Lake City	126,241	12	3	2	0	0	2	25	4
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	67	4	4	0		1	77	
Spokane	104,573	6	2	5	0		0	0	
Tacoma	101,731	4	1	2	0	0	0	0	4
Oregon:									
Portland	273,621	13	4	16	18	0	2	16	6
California:									
Los Angeles	666,853	65	33	25	13	1	61	31	20
Sacramento	69,950	2	1	4	0	0	0	1	4
San Francisco	539,038	45	24	17	5	2	8	48	8

[1] Population Jan. 1, 1920.

City reports for week ended April 25, 1925—**Continued**

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	2	5	0	0	0	0	1	0	0	0	25
New Hampshire:											
Concord	1	0	0	0	0	0	0	0	0	5	11
Manchester	2	4	0	0	0	1	0	0	0	0	20
Vermont:											
Barre	0	2	0	0	0	1	0	0	0	0	4
Burlington	1	1	1	0	0	0	0	0	0	0	7
Massachusetts:											
Boston	56	81	0	0	0	12	2	4	1	-------	240
Fall River	4	2	0	0	0	3	1	1	0	5	38
Springfield	5	20	0	0	0	3	1	0	0	1	37
Worcester	8	11	0	0	0	0	0	1	0	6	35
Rhode Island:											
Pawtucket	1	4	0	1	0	2	0	0	0	-------	-------
Providence	9	14	0	0	0	5	0	0	0	-------	80
Connecticut:											
Bridgeport	6	11	0	0	0	3	0	0	0	0	33
Hartford	4	6	0	0	0	0	0	0	0	5	35
New Haven	8	8	0	0	0	4	0	1	1	8	52
MIDDLE ATLANTIC											
New York:											
Buffalo	19	21	0	0	0	12	0	2	0	27	187
New York	215	256	0	2	0	[1] 97	10	19	2	137	1,611
Rochester	14	54	0	0	0	8	1	0	0	13	104
Syracuse	13	8	0	0	0	1	0	0	0	2	59
New Jersey:											
Camden	3	21	0	2	3	2	0	0	1	5	53
Newark	25	35	0	0	0	9	1	1	0	44	127
Trenton	3	2	0	0	0	3	1	1	0	7	52
Pennsylvania:											
Philadelphia	71	183	0	19	3	30	3	3	0	79	487
Pittsburgh	20	73	0	0	0	12	1	2	0	7	206
Reading	3	11	0	0	0	1	0	0	0	8	42
Scranton	2	4	0	0	0	1	0	0	0	5	-------
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	12	32	2	0	0	17	1	1	0	1	152
Cleveland	20	25	1	0	0	11	1	0	0	41	224
Columbus	6	10	1	13	0	8	0	0	1	11	73
Toledo	15	12	3	0	0	5	0	0	0	19	70
Indiana:											
Fort Wayne	2	7	2	1	0	0	0	0	0	2	26
Indianapolis	15	7	4	16	0	7	0	1	1	-------	107
South Bend	3	10	1	0	0	0	0	0	0	2	15
Terre Haute	2	6	1	1	0	0	0	0	0	0	19
Illinois:											
Chicago	74	260	2	5	0	53	2	2	0	143	784
Cicero	1	-------	0	-------	-------	-------	0	-------	-------	-------	-------
Springfield	1	4	1	0	0	2	1	1	1	0	33
Michigan:											
Detroit	75	121	6	1	0	20	3	1	0	86	298
Flint	6	4	1	2	0	1	0	0	0	3	20
Grand Rapids	7	48	1	2	0	1	0	0	0	1	45
Wisconsin:											
Madison	3	1	1	0	0	0	0	1	0	10	12
Milwaukee	29	26	1	12	5	4	1	0	0	26	155
Racine	5	2	1	0	0	1	0	2	0	1	14
Superior	2	13	2	0	0	8	0	0	0	0	16

[1] Pulmonary tuberculosis only.

City reports for week ended April 25, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL											
Minnesota:											
Duluth	4	19	2	0	0	1	0	0	0	1	26
Minneapolis	26	74	8	11	5	11	1	0	0	3	108
St. Paul	19	34	6	1	0	5	1	0	0	14	84
Iowa:											
Davenport	2	4	4	1			0	0		1	
Des Moines	11	7	2	0			0	0		0	
Sioux City	3	3	1	0			0	0		0	
Waterloo	2	0	0	0			0	0		7	
Missouri:											
Kansas City	11	75	3	0	0	14	1	0	0	8	114
St. Joseph	2	0	0	0	0	1	0	0	0	2	34
St. Louis	33	113	2	10	0	10	1	3	0	8	227
North Dakota:											
Fargo	2		0				0				
Grand Forks	0	0	0	0			0	0		0	
South Dakota:											
Aberdeen		1		0				0		0	
Sioux Falls	2		0				0				
Nebraska:											
Lincoln	3	0	0	0	0	1	0	0	0	3	14
Omaha	4	2	2	21	0	5	0	0	0	1	78
Kansas:											
Topeka	2	5	2	0	0	3	0	0	0	0	17
Wichita	2	1	3	0	0	3	1	0	0	14	
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	5	0	0	0	1	0	0	0	2	20
Maryland:											
Baltimore	28	41	0	2	0	19	2	0	0	91	237
Cumberland	1	1	0	0	0	0	0	0	1		16
Frederick	2	0	0	0	0	0	0	0	0	0	4
District of Columbia:											
Washington	19	25	1	8	4	16	1	2	1	0	160
Virginia:											
Lynchburg	0	1	0	0	0	0	0	0	0	14	7
Norfolk	1	2	1	0	0	4	0	0	0	11	
Richmond	2	4	0	1	0	4	0	1	0	0	50
Roanoke	1	0	1	0	0	2	0	0	0		15
West Virginia:											
Charleston	1	2	1	2	0	1	0	0	0	1	27
Huntington	0	4	0	10			0	0		0	
Wheeling	2	0	0	0	0	0	0	0	0		25
North Carolina:											
Raleigh	0	0	0	1	0	1	0	0	0	2	24
Wilmington	1	0	0	7	0	0	0	0	0	1	10
Winston-Salem	1	1	2	13	0	2	0	0	0	15	12
South Carolina:											
Charleston	1	0	1	0	0	3	1	0	0	2	25
Columbia	0	0	1	0	0	0	0	1	0	2	16
Greenville	0	0	0	4	0	1	0	1	0	0	6
Georgia:											
Atlanta	3	3	4	0	0	3	0	0	0	3	80
Brunswick	0	0	0	0	0	0	1	1	0	0	2
Savannah	0	0	1	0	0	5	1	0	0	5	34
Florida:											
St. Petersburg	3	0	0	0	0	2	0	0	1	0	19
Tampa	0	1	0	1	0	1	0	1	0	0	19
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	4	0	0	0	2	1	2	0	0	30
Louisville	4	16	1	4	0	2	1	1	0	5	81
Tennessee:											
Memphis	4	2	2	17	1	8	0	0	0	2	64
Nashville	2	11	0	7	0	2	0	0	0	1	54
Alabama:											
Birmingham	1	12	0	51	1	3	1	0	0	0	61
Mobile	0	0	1	0	0	1	0	1	0	0	18
Montgomery	1	0	1	1	0	0	0	10	0	0	16

City reports for week ended April 25, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	2	0	0			0	0		0	
Little Rock	1	0	0	0	0	1	0	0	0	0	
Louisiana:											
New Orleans	3	15	4	1	0	21	2	2	2	10	172
Shreveport		1		1	0	0		0	1	0	37
Oklahoma											
Oklahoma	2	1	4	0	0	3	0	1	0		20
Texas:											
Dallas	2	6	2	0	0	3	0	2	1	22	48
Galveston	0	2	0	1	0	0	1	7	2	0	10
Houston	0	0	1	6	0	3	0	0	0	0	56
San Antonio	1	0	0	0	0	7	0	0	0	1	61
MOUNTAIN											
Montana:											
Billings	1	3	2	0	0	0	0	0	0	1	6
Great Falls	1	23	1	2	0	0	0	0	0	0	12
Helena	0		0				0				
Missoula	1	1	1	0	0	0	0	1	0	0	8
Idaho:											
Boise	2		1				0				
Colorado:											
Denver	10	11	2	0	0	17	0	0	0	10	91
Pueblo	1	1	0	0	0	0	0	1	0	0	15
New Mexico:											
Albuquerque	0	0	0	0	0	4	0	0	0	0	10
Utah:											
Salt Lake City	3	3	1	0	0	1	1	1	0	8	28
Nevada:											
Reno	0	0	0	1	0	0	0	0	0	0	0
PACIFIC											
Washington:											
Seattle	8	8	3	17			0	1		115	
Spokane	3	2	7	2			0	0		9	
Tacoma	2	4	1	7	0	2	1	2	0	4	29
Oregon:											
Portland	7	4	4	7	0	6	0	0	0	21	
California:											
Los Angeles	13	30	1	47	0	23	2	1	0	58	216
Sacramento	1	0	0	1	0	4	1	0	0	6	28
San Francisco	16	7	2	17	1	18	1	4	0	53	151

Division, State, and city	Cerebrospinal meningitis: Cases	Cerebrospinal meningitis: Deaths	Lethargic encephalitis: Cases	Lethargic encephalitis: Deaths	Pellagra: Cases	Pellagra: Deaths	Poliomyelitis (infantile paralysis): Cases, estimated expectancy	Poliomyelitis: Cases	Poliomyelitis: Deaths
NEW ENGLAND									
Massachusetts:									
Boston	2	2	0	0	0	0	1	0	0
Rhode Island:									
Providence	0	0	0	0	0	0	0	1	0
MIDDLE ATLANTIC									
New York:									
New York	0	1	2	2	0	0	1	3	1
New Jersey:									
Trenton	0	0	0	0	0	1	0	0	0

City reports for week ended April 25, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	0	0	0	1	0	0	0	0	0
Illinois:									
Chicago	0	0	1	1	0	0	0	0	0
Michigan:									
Detroit	1	0	1	0	0	0	0	0	0
Flint	0	0	0	0	0	0	0	1	0
Wisconsin:									
Milwaukee	0	0	0	0	0	0	0	1	1
WEST NORTH CENTRAL									
Missouri.									
St Louis	1	0	0	0	0	0	0	0	0
Kansas.									
Wichita	1	1	0	0	0	0	0	0	0
SOUTH ATLANTIC									
South Carolina.									
Columbia	0	0	0	0	0	4	0	0	0
Greenville	0	0	0	0	0	1	0	0	0
Florida.									
St. Petersburg	0	0	0	1	0	0	0	0	1
EAST SOUTH CENTRAL									
Kentucky									
Louisville	2	1	0	0	0	0	0	0	0
Tennessee									
Memphis	0	0	0	0	0	1	0	0	0
Nashville	0	0	0	0	0	1	0	0	0
Alabama:									
Mobile	0	0	0	0	1	1	0	0	0
Montgomery	0	0	0	0	1	0	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock	0	1	0	1	1	0	0	0	0
Louisiana									
New Orleans	0	0	0	0	1	2	0	0	0
Shreveport	0	1	0	0	0	4		0	0
Texas.									
Galveston	0	0	0	0	0	0	0	1	0
San Antonio	0	0	0	1	0	0	0	0	0
PACIFIC									
Washington:									
Spokane	1		0		0		0	0	0
Oregon									
Portland	2	1	0	0	0	0	0	0	0
California.									
Los Angeles	0	0	2	1	0	1	1	5	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended April 25, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below:

Summary of weekly reports from cities, February 15 to April 25, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25
105 cities	149	[2] 169	162	167	167	[3] 168	177	[4] 158	[5] 161	[6] 162
New England	241	[2] 189	233	176	147	119	171	166	129	144
Middle Atlantic	163	178	167	214	196	231	241	220	228	218
East North Central	123	119	114	128	134	112	93	[4] 97	[4] 111	[4] 114
West North Central	269	299	282	201	199	247	220	226	168	[7] 191
South Atlantic	156	114	104	91	136	95	81	73	102	108
East South Central	80	51	63	40	69	57	23	34	46	40
West South Central	125	162	144	158	97	121	83	107	[8] 66	79
Mountain	162	153	86	105	143	134	124	105	239	[9] 285
Pacific	165	258	235	197	249	[3] 179	374	171	168	165

MEASLE [CASE RATES

	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25
105 cities	383	[2] 358	418	449	506	[3] 507	558	[4] 530	[5] 589	[6] 645
New England	720	[2] 585	656	512	725	755	957	1,011	917	1,217
Middle Atlantic	373	343	428	518	598	633	734	680	815	782
East North Central	688	632	789	740	775	798	736	[4] 706	[4] 731	[4] 894
West North Central	27	73	68	75	93	89	77	58	91	[7] 104
South Atlantic	110	81	100	146	189	136	209	207	256	295
East South Central	51	46	86	11	69	34	69	34	97	189
West South Central	14	51	23	88	42	9	88	51	[8] 72	37
Mountain	620	916	29	763	573	38	219	57	267	[9] 224
Pacific	64	61	107	110	189	[3] 151	209	241	154	203

SCARLET FEVER CASE RATES

	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25
105 cities	390	[2] 408	395	432	427	[3] 419	409	[4] 366	[5] 343	[6] 359
New England	606	[2] 558	584	534	544	604	534	529	350	407
Middle Atlantic	376	412	372	439	417	405	436	359	343	336
East North Central	432	434	433	497	498	483	442	[4] 419	[4] 404	[4] 431
West North Central	742	734	775	719	792	755	736	647	651	[7] 691
South Atlantic	167	203	171	219	146	167	175	152	167	175
East South Central	223	183	194	355	286	286	263	280	229	257
West South Central	125	144	185	107	134	102	51	88	[8] 61	121
Mountain	248	315	286	200	429	248	277	258	315	[9] 428
Pacific	186	223	218	229	218	[3] 222	191	174	145	148

SMALLPOX CASE RATES

	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25
105 cities	66	[2] 66	62	61	63	[3] 58	57	[4] 51	[5] 49	[6] 62
New England	0	[2] 0	0	0	0	0	12	2	0	2
Middle Atlantic	2	3	1	5	8	7	21	10	18	12
East North Central	56	28	42	39	32	33	24	[4] 22	[4] 27	[4] 40
West North Central	126	120	114	124	102	135	87	97	85	[7] 91
South Atlantic	67	43	51	59	57	67	49	43	53	79
East South Central	532	583	652	446	646	423	42	572	395	457
West South Central	83	116	71	74	107	107	46	51	[8] 17	42
Mountain	86	57	48	95	67	19	19	19	10	[9] 31
Pacific	215	313	206	247	212	[3] 191	255	148	162	264

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Hartford, Conn., not included. Report not received at time of going to press.
[3] Spokane, Wash., not included.
[4] Cicero, Ill., not included.
[5] Cicero, Ill., and Dallas, Tex., not included.
[6] Cicero, Ill., Fargo, N. Dak., Sioux Falls, S. Dak., Helena, Mont., and Boise, Idaho, not included.
[7] Fargo, N. Dak., and Sioux Falls, S. Dak., not included.
[8] Dallas, Tex not included.
[9] Helena, Mont., and Boise, Idaho, not included.

Summary of weekly reports from cities, February 15 to April 25, 1925—Annual rates per 100,000 population

TYPHOID FEVER CASE RATES

	Week ended—									
	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25
105 cities	11	[2] 14	11	10	12	[3] 11	9	[4] 10	[5] 11	[6] 16
New England	0	[2] 13	7	5	30	12	5	2	7	17
Middle Atlantic	10	8	10	5	8	7	4	9	11	14
East North Central	6	7	11	4	7	3	4	[4] 6	[4] 5	[4] 7
West North Central	4	17	6	10	8	6	2	2	2	[7] 6
South Atlantic	8	20	8	24	22	12	30	20	12	14
East South Central	34	34	34	34	46	57	17	17	34	80
West South Central	42	42	28	28	23	42	32	37	[8] 39	51
Mountain	38	76	10	19	0	0	0	19	38	[9] 31
Pacific	23	9	15	15	0	[3] 28	20	9	12	23

INFLUENZA DEATH RATES

	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25
105 cities	30	[2] 31	30	34	42	33	34	[4] 27	[10] 28	[6] 30
New England	17	[2] 40	17	35	30	30	35	32	27	30
Middle Atlantic	21	20	15	24	29	22	21	16	24	17
East North Central	18	24	27	33	49	10	38	[4] 27	[4] 25	[4] 33
West North Central	22	37	35	33	42	16	39	37	50	[7] 49
South Atlantic	55	49	53	33	53	12	28	26	12	43
East South Central	74	126	103	91	120	86	69	74	80	86
West South Central	153	148	143	107	76	36	36	46	[11] 47	25
Mountain	57	19	19	48	48	38	181	86	38	[9] 82
Pacific	12	29	29	16	12	53	29	12	29	12

PNEUMONIA DEATH RATES

	Feb. 21	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25
105 cities	216	[2] 201	205	222	217	206	204	[4] 202	[10] 195	[6] 204
New England	241	[2] 242	226	229	211	219	251	211	206	186
Middle Atlantic	216	185	210	214	217	199	215	190	204	223
East North Central	184	171	195	241	222	214	182	[4] 191	[4] 191	[4] 213
West North Central	131	166	140	175	173	166	193	228	171	[7] 139
South Atlantic	252	305	268	246	290	252	234	238	232	191
East South Central	320	292	259	366	286	269	269	343	206	286
West South Central	408	260	220	178	178	168	168	168	[11] 160	158
Mountain	219	267	162	210	172	200	162	267	210	[9] 234
Pacific	213	163	139	155	131	159	159	119	98	147

[2] Hartford, Conn., not included. Report not received at time of going to press.
[3] Spokane, Wash., not included.
[4] Cicero, Ill., not included.
[5] Cicero, Ill., and Dallas, Tex., not included.
[6] Cicero, Ill., Fargo, N. Dak., Sioux Falls, S. Dak., Helena, Mont., and Boise, Idaho, not included.
[7] Fargo, N. Dak., and Sioux Falls, S. Dak., not included.
[8] Dallas, Tex., not included.
[9] Helena, Mont., and Boise, Idaho, not included.
[10] Cicero, Ill., and New Orleans, La., not included.
[11] New Orleans, La., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

BOLIVIA

Smallpox—Typhus fever—La Paz—March, 1925.—During the month of March, 1925, there were reported at La Paz, Bolivia, five deaths from smallpox, and one case of typhus fever.

CANADA

Communicable diseases—Ontario—March 29–April 25, 1925 (comparative).—During the four-week period ended April 25, 1925, communicable diseases were reported in the province of Ontario as follows:

Disease	1925		1924	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis		2	6	2
Chancroid	4			
Chicken pox	322		398	
Diphtheria	182	16	188	20
German measles	6		190	
Goiter	14		16	3
Gonorrhea	88		98	
Influenza	160	36		14
Lethargic encephalitis	4	3		6
Measles	1,643	2	3,209	4
Mumps	848		1,009	
Pneumonia		203		232
Scarlet fever	603	8	691	12
Septic sore throat	15		8	1
Smallpox	12		49	3
Syphilis	119		118	
Tuberculosis	142	83	180	93
Typhoid fever	26	2	34	7
Whooping cough	352	10	140	4

Smallpox.- Smallpox was reported present in four localities, the largest number of cases, viz, 7, being reported at Welland.

CUBA

Communicable diseases—Provinces—January and February, 1925.—Cases of diseases were notified in the provinces of Cuba for the months of January and February, 1925, as follows:

JANUARY, 1925

Disease	Pinar del Rio	Habana	Matanzas	Santa Clara	Camaguey	Oriente	Total
Chicken pox		9		1	1	6	17
Diphtheria	1	20				6	27
Malaria	20	67	8	4	76	558	733
Measles	1	31	1	12	1	6	52
Paratyphoid fever		3		1			4
Scarlet fever	2						2
Tetanus (infantile)				1			1
Typhoid fever	9	49	5	25	8	20	116

FEBRUARY, 1925

Disease	Pinar del Rio	Habana	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cerebrospinal meningitis				1			1
Chicken pox		6		2	1	1	10
Diphtheria		23	4	2	1	3	33
Malaria	15	64	6	5	79	707	876
Measles	3	44	6	42	2	9	106
Paratyphoid fever		3	1		2		6
Poliomyelitis	10						10
Scarlet fever	3	9					12
Smallpox						1	1
Tetanus (infantile)	1						1
Typhoid fever	18	34	6	29	5	14	106

Communicable diseases—Habana—March 1–31, 1925.—During the period March 1 to 31, 1925, communicable diseases were reported at Habana, Cuba, as follows:

Disease	Mar. 1–31, 1925		Remaining under treatment Mar. 31, 1925
	New cases	Deaths	
Cerebrospinal meningitis	1	1	0
Chicken pox	14	1	[1] 8
Diphtheria	13	3	2
Leprosy			10
Malaria	36		[1] 20
Measles	132	1	64
Scarlet fever	8		8
Typhoid fever	30	5	[1] 31

[1] A number of cases of chicken pox, malaria, and typhoid fever were from the interior of the island; one case of chicken pox and one case of typhoid fever were from abroad.

ECUADOR

Plague—Plague-infected rats—March 16–April 15, 1925.—During the period March 16 to April 15, 1925, 10 cases of plague with four deaths were reported in Ecuador. Of these, one case occurred at Daule, and nine cases at Guayaquil. During the same period, out of 22,290 rats taken, 60 were found plague infected.

ITALY

Malta fever—Catania—Province of Syracuse—March 24–30, 1925.—During the week ended March 30, 1925, Malta fever was reported in Italy as follows: Catania, two cases; Province of Syracuse, one case.

JAMAICA

Smallpox (reported as alastrim)—Typhoid fever—February 1–April 25, 1925.—Smallpox (reported as alastrim) and typhoid fever have been reported in the Island of Jamaica, exclusive of Kingston, as follows: *Smallpox*—February 1–28, 1925: Cases, 34; March 1–28, 1925: Cases, 98; March 29–April 25, 1925: Cases, 100. *Typhoid fever*—February 1–28, 1925: Cases, 56; March 1–28, 1925: Cases, 50; March 29–April 25, 1925: Cases, 50.

Chicken pox—Lethargic encephalitis—During the same period, 28 cases of chicken pox and 4 cases of lethargic encephalitis were reported in the Island of Jamaica, exclusive of Kingston.

MALTA

Communicable diseases—March 16–31, 1925.—During the period March 16 to 31, 1925, 5 cases of chicken pox, 255 cases of influenza, 12 cases of Malta (undulant) fever, and 1 case of poliomyelitis (infantile paralysis) were notified in the island of Malta. Population, 223,088.

MEXICO

Decree against wooden construction at Gulf ports.—According to information dated April 24, 1925, a recent decree of the President of the Republic of Mexico prohibits the construction of wooden houses or other structures at Gulf ports, as a measure against rat harborage.

Epidemic cerebrospinal meningitis—State of Morelos.—April 22–25, 1925.—During the period April 22 to 25, 1925, eight cases of epidemic cerebrospinal meningitis were reported in the State of Morelos, Mexico.[1]

UNION OF SOUTH AFRICA

Plague—March 15–21, 1925.—During the week ended March 21, 1925, three cases of plague with two deaths were reported in the Union of South Africa. Of these, one case occurred in the white population. The occurrence was on farms.

[1] Public Health Reports, May 8, 1925, p. 972.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended May 15, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Feb 22-Mar. 7, 1925 Cases, 4,339; deaths, 2,451.
Calcutta	Mar 15-21	25	16	
Rangoon	Mar 22-28	1	1	
Siam:				
Bangkok	Mar. 15-21		1	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Brazil:				
Bahia	Mar 29-Apr 4	3	2	
British East Africa:				
Tanganyika	Mar 8-14	1	1	
Uganda	Jan 1 31	29	28	
Ceylon				
Colombo	Mar 22-28	2	2	
Ecuador				Mar 16-Apr 15, 1925: Cases, 10; deaths, 4
Daule	Mar. 16-31	1		Rats taken, 22,290; found infected, 60
Guayaquil	Mar 16-Apr 15	9	4	
India				Feb 22 Mar 7, 1925. Cases, 9,444, deaths, 7,777
Karachi	Mar 29-Apr 4	4	5	
Rangoon	Mar 15-28	36	27	
Java:				
East Java—				
Soerabaya	Feb 26 Mar 11	11	9	
Soerakarta	Feb 20			Epidemic plague in one locality.
West Java—				
Cheribon	Feb 19-25		13	
Pekalongan	do		38	
Tegal	do		10	
Siam:				
Bangkok	Mar 15-21	4	4	
Straits Settlements				
Singapore	do	2		
Union of South Africa				Mar 15-21, 1925: Cases, 3; deaths, 2; 1 case in white population.
Bothaville area	Mar 15-21	1		White, on farm.
Kroonstad district	do	2	2	Native, on farms

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers				Mar. 1-31, 1925 Cases, 4.
Argentina.				
Buenos Aires	Mar. 15-21	1		
Bolivia:				
La Paz	Mar 1-31		5	
Brazil:				
Pernambuco	Mar 1-14	8	8	
British East Africa:				
Mombasa	Mar. 8-28	29	7	
Canada:				
British Columbia—				
Vancouver	Apr. 19-25	8		
Victoria	do	1		
Ontario				Mar. 29-Apr. 25, 1925: Cases, 12.
Kingston	Apr 12-18	1		
Welland	Mar 22-Apr 25	7		
Ceylon:				
Colombo	Mar. 22-28	1		Port case.
China:				
Canton	Mar 15-28			Prevalent.
Hongkong	Mar. 15-21	8	3	
Egypt:				
Cairo	Jan. 29-Feb 4	1	1	
Great Britain:				
England and Wales	Mar. 22-Apr. 11	435		

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended May 15, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
India				Feb. 22-Mar. 7, 1925: Cases, 9,948; deaths, 2,432.
Calcutta	Mar. 15-21	581	451	
Karachi	Mar 29-Apr. 4.	8	4	
Rangoon	Mar. 15-28	406	102	
Jamaica				Feb. 1-Apr. 25, 1925: Cases, 232. Exclusive of Kingston. Reported as alastrim.
Japan:				
Nagasaki	Apr. 6-12	11	2	
Java.				
East Java—				
Soerabaya	Feb. 26-Mar. 11	85	16	
Latvia				Feb. 1-28, 1925: Cases, 1.
Mexico:				
Chiapas (State)	Mar 1			Reported severely prevalent.
Guadalajara	Apr. 21-27	4		
Oaxaca (State)	Mar 1			Do.
Mexico City	Apr. 12-18	12		Including municipalities in Federal district.
Tampico	Apr 1-20	5	2	
Vera Cruz	Apr. 12-19		1	
Paraguay:				
Asuncion	Jan 4-10		1	
Siam.				
Bangkok	Mar. 15-21	1	1	
Spain:				
Malaga	Apr. 12-18		1	
Switzerland:				
Berne	Mar. 15-21	1		
Union of South Africa:				
Cape Province	do			Outbreaks.
Transvaal	do			Do.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria.				
Algiers				Mar 1-31, 1925. Cases, 5; deaths, 2.
Bolivia:				
La Paz	Mar. 1-31	1		
Egypt:				
Cairo	Jan 22-28	1		
Greece:				
Athens	Mar. 11-31		4	
Latvia				Feb. 1-28, 1925: Cases, 11.
Mexico.				
Mexico City	Apr. 12-18	7		Including municipalities in Federal District.
Union of South Africa:				
Cape Province	Mar. 1-15			Outbreaks.
East London	Mar 15-Apr. 4	2	2	
Natal:				
Durban	Mar. 8-14	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 8, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Dec 27, 1924: Cases, 14; deaths, 13. Dec. 28, 1924-Jan. 24, 1925 Cases, 24, deaths, 17
Colombo	Nov 16-22	1		
Do	Jan 11-24	2	2	
India				Oct 19, 1924, to Jan 3, 1925: Cases, 27,164, deaths, 16,228. Jan. 4-Feb. 21, 1925 Cases, 15,894, deaths, 9,381.
Bombay	Nov 23-Dec. 20	4	4	
Do	Jan. 18 24	1	1	
Calcutta	Oct 26-Jan. 3	59	51	
Do	Jan. 4-Mar 14	180	148	
Madras	Nov 16-Jan. 3	69	40	
Do	Jan 4-Mar 7	139	98	
Rangoon	Nov 9-Dec. 20	9	2	
Do	Jan. 4-Mar. 14	13	9	
Indo-China				Aug 1-Sept 30, 1924. Cases, 14; deaths, 10 Dec. 1-31, 1924: Cases, 5; deaths, 2.
Province—				
Anam	Aug 1-31	1	1	
Cambodia	Aug 1-Sept 30	6	5	
Do	Dec 1-31	1		
Cochin-China	Aug 1-Dec. 31	10	5	
Saigon	Nov. 30-Dec. 6	1		
Tonkin	Dec. 1-31	1	1	
Siam:				
Bangkok	Nov 9-29	4	2	
Do	Jan 18-Mar. 14	8	4	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov 2-Jan 3	30	13	
Do	Jan 18-24	3	1	
Brazil				
Bahia	Jan. 4-Mar. 21	6	4	
Santos	Year, 1924	2		Bubonic.
British East Africa.				
Tanganyika Territory	Nov 23-Dec. 27	17	10	
Do	Jan. 18-24	17	11	
Uganda	Aug.-Dec, 1924	279	243	
Canary Islands:				
Las Palmas	Jan 21-23	2		Stated to be endemic.
Do	Feb 4	1		Stated to have been infected with plague Sept 30, 1924
Do	Mar. 26	1	1	
Realejo Alto	Dec 19	3	1	Vicinity of Santa Cruz de Teneriffe
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.
Celebes:				
Macassar	Oct 29			Epidemic.
Ceylon.				
Colombo	Nov. 9-Jan. 3	12	9	
Do	Jan. 4-Mar 21	14	15	
China.				
Foochow	Dec 28-Jan. 3			Present.
Nanking	Nov 23-Mar 7			Do.
Shing Hsien	October, 1924		790	
Ecuador:				
Chimborazo Province—				
Alausi District	Jan 14		14	At 2 localities on Guayaquil & Quito Ry.
Guayaquil	Nov. 16-Dec 31	9	3	Rats taken, 27,004; found infected, 92.
Do	Jan. 1-Mar. 15	59	25	Rats taken, 45,027; rats found infected, 234.
Naranjito	Feb. 16-Mar. 15	1		
Yaguachi	Feb. 1-Mar. 15	2	1	
Egypt				Year 1924: Cases, 373. Jan. 1-Apr. 1, 1925: Cases, 17; deaths, 9.
City—				
Alexandria	Year 1924	2	2	Last case Nov 26
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec. 7.
Suez	do	20	13	Last case, Dec. 20.
Do	Apr. 2	1	1	Last case, Apr. 2.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 8, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Egypt—Continued.				
Province—				
Beni-Souef	Jan. 18	1	1	Last case, Jan. 18.
Dakhalia	Jan 1-8	1	1	Last case, Jan. 7.
Girgeh	Jan. 9	1	1	Last case, Jan. 9.
Kalioubiah	Jan. 5-22	8	2	Last case, Jan. 22.
Menoufieh	Jan 1-8	7	3	Last case, Jan. 3.
Minieh	Apr. 1	1		Last case, Apr. 1.
Gold Coast				September-December, 1924: Deaths, 52.
Hawaii:				
Honokaa	Nov. 4	1		Plague-infected rodents found, Dec. 9, 1924, and Jan. 15, 1925.
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 28,154; deaths, 21,505. Jan 4-Feb. 21, 1925: Cases, 28,880; deaths, 24,022.
Bombay	Nov. 23-Jan 3	4	3	
Do	Jan. 4-17	2	2	
Do	Feb 8-Mar. 14	26	22	
Calcutta	Jan 18-24	1	1	
Karachi	Nov 30-Dec 6	2	1	
Do	Jan 4-Feb. 21	12	11	
Madras Presidency	Nov. 23-Jan 3	685	487	
Do	Jan. 4-24	658	511	
Rangoon	Oct. 26 Jan. 3	26	25	
Do	Jan. 4-Mar 14	121	109	
Indo-China				Aug. 1-Sept 30, 1924: Cases, 25; deaths, 20. Dec. 1-31, 1924: Cases, 11, deaths, 11 Corresponding month, 1923: Cases, 15, deaths, 5.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Do	Dec 1-31	5	5	
Cambodia	Aug 1-Sept. 30	18	15	
Do	Dec 1-31	6	6	
Cochin-China	do	3	1	
Saigon	Dec 25-31	1	1	Including 100 square kilometers of surrounding territory.
Do	Jan 11-17	2	1	Do.
Iraq	June 29-Jan. 3	20	14	
Japan	Aug. 10-Dec. 6	19		
Java				
East Java—				
Blitar	Nov. 11 22			Province of Kediri; epidemic.
Pare	Nov 29			Do.
Samarang	Mar 22-28	2	2	
Sidoardja	Jan 2			Declared epidemic, Province of Soerabaya
Soerabaya	Nov. 16-Dec 31	71	72	
Do	Jan. 15-Feb. 28	6	5	Mar. 29-Apr. 4, 1925. Two plague rats found.
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov. 18-Dec. 22		80	
Do	Jan 1-14		44	
Do	Feb 5-11		13	
Pasoeroean	Dec 27			Province. Epidemic in one locality.
Pekalongan	Oct. 14-Nov. 3		29	
Do	Nov. 18-Dec. 31		177	Pekalongan Province.
Do	Jan. 1-14		81	
Do	Feb 5-11		36	
Probalingga	Dec. 27			Province. Epidemic.
Tegal	Oct. 14-Dec 31		26	
Do	Jan. 1-14		37	Pekalongan Province.
Do	Feb. 5-11		7	
Madagascar:				
Fort Dauphin (port)	Nov. 1-Dec. 15	12	5	
Do	Feb 1-15	1	1	Bubonic.
Itasy Province	Nov. 1-Dec. 15	4	2	
Do	Feb. 1-28	3	3	
Majunga (port)	Nov. 1-30	1	1	
Moramanga Province				Nov. 1-Dec 15, 1924: Cases, 49; Deaths, 34. Jan. 16-Feb. 28, 1925: Cases, 6; deaths, 6.
Tamatave (port)	Nov. 1-30	1	1	
Tananarive Province				Oct. 16-Dec. 31, 1924: Cases, 298; deaths, 274.
Do				Jan. 1-Feb. 28: Cases, 357; deaths, 295.
Tananarive (town)	Oct. 16-Nov. 30	8	7	
Do	Dec 16-31	4	4	
Do	Jan. 1-Feb. 28	4	4	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 8, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Mauritius Island				Year 1924. Cases, 161, deaths, 144.
District—				
Flacq	Dec. 1-31	5	4	
Pamplemousses	do	1	1	
Plaines Wilhems	January-December, 1924	54	47	Not present March, April, May.
Port Louis	February-December, 1924.	101	92	
Mexico:				
Tampico	Apr. 6, 1925			Plague rat found in vicinity of Government wharves.
Morocco				
Marrakech				Feb. 9, 1925 Present in native quarter of town. Stated to be pneumonic in form and of high mortality
Nigeria				August-November, 1924: Cases, 387; deaths, 317.
Palestine:				
Jerusalem	Mar. 3-9	1		
Peru:				
Callao	February, 1925	6	6	
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan 25-Mar. 7	3	2	
Siberia:				
Transbaikalia—				
Turga	October, 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Do.	Jan 4-Mar 14	18	5	
Do	Mar 28-Apr. 4	4		One plague rat.
Syria:				
Beirut	Jan 11-20	1		
Turkey.				
Constantinople	Jan 9-15	5	5	
Union of South Africa	Nov. 22-Jan 3	28	15	In Cape Province, Orange Free State, and Transvaal.
Do.	Jan. 4-Mar 14	48	19	Do.
On vessels:				
S. S. Conde				At Marseille, France, Nov 8, 1924 Plague rat found. Vessel left for Tamatave, Madagascar, Nov 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 31, 1924: Cases, 409. Jan 1-20, 1925. Cases, 107.
Algiers	Jan. 1-Feb. 28	6		
Arabia				
Aden	Jan. 25-Mar 21	12	1	Imported.
Belgium	Jan. 1-Feb. 10	4		
Bolivia:				
La Paz	Nov 1-Dec 31	20	11	
Do	Jan 1-Feb. 28	5	7	
Brazil:				
Pernambuco	Nov. 9-Jan. 3	100	27	
Do	Jan. 4-Feb. 28	95	42	
British East Africa:				
Kenya—				
Mombasa	Jan. 18-Feb 28	66	14	
Uganda—				
Entebbe	Oct. 1-31	4		
Tanganyika Territory	Feb. 15-21	1		
British South Africa:				
Northern Rhodesia	Oct. 28-Dec. 15	57	2	
Do	Jan. 27-Feb. 2	3		Natives.
Southern Rhodesia	Jan. 29-Mar 18	3	1	
Bulgaria:				
Sofia	Mar. 12-18	1		Varioloid.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 8, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Canada:				
Alberta—				
Calgary	Mar. 15-21	1		
British Columbia—				
Ocean Falls	Mar. 7-27	6		Very mild.
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-Apr. 12	305		
Victoria	Jan. 18-Apr. 18	10		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-Feb. 27	30		
Do	Apr. 5-11	1		
New Brunswick—				
Bonaventure and Gaspe Counties.	Jan. 1-31	1		
Northumberland	Feb. 8-14	1		County.
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33. Dec. 28, 1924, to Mar. 28, 1925: Cases, 57, deaths, 1.
Hamilton	Jan. 24-30	1		
Ottawa	Mar. 29-Apr. 4	1		
Ceylon				July 27-Nov. 29, 1924: Cases, 27; deaths, 1.
Colombo	Jan. 18-Feb. 7	4		
Do	Mar. 8-21	10		
China:				
Amoy	Nov. 9-Feb. 21			Present.
Do	Feb. 22-Mar. 28		11	
Antung	Nov. 17-Dec. 28	5		
Do	Jan. 5-Feb. 14	15	1	
Do	Mar. 2-29	8		
Foochow	Nov. 2-Mar. 21			Present.
Hongkong	Nov. 9-Jan. 3	6	2	
Do	Jan. 4-Feb. 7	9	7	
Do	Feb. 15-Mar. 14	10	6	
Do	Mar. 22-Apr. 4	9	4	
Manchuria—				
Dairen	Jan. 19-Feb. 1	2		
Harbin	Jan. 15-Feb. 11	5		
Nanking	Jan. 4-Mar. 28			Do.
Shanghai	Dec. 7-27	1	2	
Do	Jan. 18-Mar. 7		8	
Chosen:				
Seoul	Dec. 1-31	1		
Colombia:				
Buenaventura	Feb. 15-28	2		
Santa Marta	Mar. 15-28			Present in mild form in localities in vicinity.
Cuba:				
Santiago	Apr. 12-18	3	1	
Czechoslovakia				April-June, 1924: Cases, 1; occurring in Province of Moravia.
Dominican Republic:				
Puerta Plata	Mar. 8-21	3		
Dutch Guiana:				
Paramaribo	Apr. 20	1		
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 31	10		
Do	Jan. 8-28	8		
Do	Feb. 26-Mar. 4	1		
Esthonia				Dec. 1-31, 1924: Cases, 2.
France				July-December, 1924: Cases, 81.
Do	January, 1925	10		
Dunkirk	Mar. 2-8	1		From vessel. In quarantine.
St. Malo	Feb. 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis.
Germany				June 29-Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1-10	1		
Gibraltar	Dec. 8-14	1		
Gold Coast				July-December, 1924: Cases, 106; deaths, 1.
Great Britain:				
England and Wales	Nov. 23-Jan. 3	472		
Do	Jan. 4-Mar. 21	1,477		
Newcastle-on-Tyne	Jan. 18-Feb. 21	9		
Do	Mar. 1-7	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 8, 1925—Continued

SMALLPOX—Continued.

Place	Date	Cases	Deaths	Remarks
Greece				January-June, 1924: Cases, 170; deaths, 27.
Do				July-December, 1924: Cases, 38; deaths, 26.
Saloniki	Nov. 11-Dec. 22	3		
Haiti				
Cape Haitien	Mar. 22-Apr. 2	6		
India				Oct 19, 1924, to Jan 3, 1925: Cases, 12,564; deaths, 2,857. Jan. 4-Feb 21, 1925: Cases, 22,834, deaths, 5,019
Bombay	Nov. 2-Jan. 3	30	18	
Do	Jan 4-Mar. 14	389	190	
Calcutta	Oct 26-Jan 8	307	170	
Do	Jan 4-Mar 14	2,088	1,624	
Karachi	Nov 16-Jan 3	16	2	
Do	Jan 4-Feb. 14	52	6	
Do	Feb. 22-Mar. 28	59	17	
Madras	Nov 16-Jan 3	122	48	
Do	Jan 4-Mar 7	552	212	
Do	Mar. 15-28	196	83	
Rangoon	Oct 26-Jan 3	86	28	
Do	Jan 4-Feb. 7	287	49	
Do	Feb 15-Mar. 14	488	125	
Indo-China				Aug 1-Sept. 30, 1924 Cases, 223; deaths, 76. Dec. 1-31, 1925: Cases, 485, deaths, 114.
Province—				
Anam	Aug. 1-Sept. 30	49	11	
Do	Dec. 1-31	167	26	
Cambodia	Aug. 1-Sept 30	40	9	
Do	Dec. 1-31	30	13	
Cochin-China				Aug 1-Sept 30, 1924: Cases, 115; deaths, 49 Dec. 1-31, 1924: Cases, 56, deaths, 13.
Saigon	Nov 16-Jan 3	17	5	Including 100 square kilometers of surrounding country.
Do	Jan 4-Feb. 21	32	8	Do.
Do	Mar 1-14	14	3	
Tonkin	Aug 1-Sept 30	19	7	
Do	Dec 1 31	238	62	
Iraq	June 29-Jan 10	138	67	
Do	Jan 11 20	4	2	
Bagdad	Nov 9-Dec 27	2	1	
Do	Mar 1-7	1		
Italy				June 29-Dec. 27, 1924: Cases, 63.
Jamaica				Nov. 30, 1924-Jan 3, 1925 Cases, 50 Reported as alastrim.
Do				Jan 4-31, 1925 Cases, 43. Reported as alastrim
Kingston	Nov 30-Dec 27	4		Reported as alastrim
Japan				Aug. 1-Nov 15, 1924 Cases, 4.
Nagasaki	Feb. 9-Apr. 5	9	2	
Taiwan	Jan. 1-31	1		
Java:				
East Java—				
Pasoeroean	Oct 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in 2 native villages.
Soerabaya	Oct. 19-Dec 31	685	212	
Do	Jan 15-Feb. 25	376	53	
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov. 14	2		
Do	Dec 20-Jan. 2	19	4	
Buitenzorg	Dec. 25-31	1		Batavia Residency.
Cheribon	Oct. 14-Nov. 24	15		
Do	Jan. 1-28	3		
Krawang	Jan. 15-21	1		
Pekalongan	Oct. 14-Nov. 24	22		
Do	Dec 25-31	3		Province.
Pemalang	Jan. 8-14	1		Pekalongan Residency.
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov 30, 1924: Cases, 5. Jan. 1-31, 1925: Cases, 5.
Lithuania				Jan. 1-31, 1925: Cases, 2.
Mexico:				
Durango	Dec. 1-31		5	
Do	Jan 1-Mar 31		16	
Guadalajara	Dec. 23-29		1	
Do	Jan. 6-Mar. 23		4	
Mexico City	Nov. 23-Dec. 27	5		
Do	Jan. 11-Apr. 11	45		
Monterey				Jan. 24, 1925: Outbreak. Mar. 14, 1925, present.
Salina Cruz	Dec. 1-31	1	1	
Do	Feb. 22-Mar. 31	7	1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 8, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico—Continued.				
Saltillo	Feb. 22-Apr. 11		2	
San Luis Potosi	Mar. 29-Apr. 11		2	
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-Mar. 31	59	18	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan. 5-Apr. 5		38	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Yucatan State	Apr. 5-11			In country towns.
Nigeria				January-June, 1924: Cases, 357; deaths, 87.
Do				July-November, 1924: Cases, 87; deaths, 25.
Persia.				
Teheran	Sept. 23-Dec. 31		12	
Do	Jan. 1-31		10	
Peru				
Arequipa	Nov. 24-30		1	
Do	Jan. 1-31		3	
Philippine Islands				
Manila	Mar. 29-Apr. 4	3		
Poland				Sept. 21-Dec 28, 1924 Cases, 30; deaths, 2. Jan. 4-Feb. 7, 1925: Cases, 13; deaths, 1.
Portugal:				
Lisbon	Dec. 7 Jan. 3	17		
Do	Jan 4 Apr. 5	78	14	
Oporto	Nov. 30-Dec. 27	3	2	
Do	Jan. 11-Mar. 14	3		
Russia				January-June, 1924 Cases, 18,229 July-November, 1924 Cases, 3,665.
Senegal.				
Dakar	Mar. 16 22	4		
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan 18-Feb 21		19	
Do	Mar. 1-14	10	3	
Sierra Leone:				
Freetown	Feb. 7-14	2		From S. S. Elmina.
Kaiyima	Mar. 9-15	1		
Spain.				
Barcelona	Nov. 27-Dec 31		5	
Do	Mar. 19 25		1	
Cadiz	Nov. 1-Dec 31		51	
Do	Jan 1-Feb. 28		10	
Madrid	Year 1924		40	
Do	January-February		13	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan 4-Apr. 11		94	
Valencia	Nov. 30-Dec. 6	2		
Do	Feb. 15-Mar. 28	5		
Straits Settlements				
Singapore	Feb. 22-Apr. 4	4	1	
Switzerland.				
Lucerne	Nov. 1-Dec. 31	19		
Do	Jan. 1-31	24		
Syria				
Aleppo	Nov 23-Dec. 27	13		
Do	Jan. 4-Feb. 28	71	18	
Beirut	Feb. 11-20	1		
Damascus	Jan. 6-13	2		
Do	Feb. 11-20	22		
Tripoli:				
Tripoli	July 14-Jan. 2	53		
Tunis.				
Tunis	Nov. 25-Dec. 29	42	35	
Do	Jan. 1-Apr. 15		307	
Turkey.				
Constantinople	Dec. 13-19	5		
Do	Mar. 16-22	2		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1925 to May 8, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa				Nov 1-Dec. 31, 1924: Cases, 14. Jan 1-31, 1925. Cases, 4—natives
Cape Province	Feb 1-7			Outbreaks
De Aar District	Jan 25-31			Outbreak at railway camp.
Do	Nov 9-Jan. 17			Outbreaks.
Natal	Mar 1 7			Do.
Orange Free State	Nov 2-8			Do
Ladybrand District	Jan. 15-31			Outbreak on farm.
Transvaal	Nov 9-Jan 10			Do
Do	Feb. 1-7			Outbreaks
Uruguay				January-June, 1924. Cases, 101; deaths, 2
Do				July-November, 1924: Cases, 53; deaths, 5.
Yugoslavia.				
Belgrade	Mar 1-Apr. 7	6		
On vessel				
S. S. Eldridge	Mar. 23	1		At Port Townsend, from Yokohama and ports
S. S Habana	Feb 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St Malo, France, January, 1921, from Sfax Tunis, believed to have imported smallpox infection.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec 20, 1924 Cases, 101; deaths, 14.
Algiers	Nov 1-Dec 31	5	1	
Do	Jan 1-Mar 20	11	4	
Argentina.				
Rosario	Jan. 1 31		1	
Bolivia				
La Paz	Nov 1-Dec 31	3		
Do	Jan. 1-31	2		
Bulgaria				January June, 1924. Cases, 191; deaths, 28
Do				July October, 1924 Cases, 5.
Chile:				
Concepcion	Nov. 25-Dec 1		1	
Do	Jan. 6-12		2	
Do	Jan 27-Feb 2		1	
Iquique	Nov 25-Dec. 1		2	
Do	Feb 1-Mar. 28		2	
Talcahuano	Nov 16-Dec. 20		5	
Do	Jan 4-10		1	
Valparaiso	Nov 25-Dec 7		4	
Do	Jan 11-Mar 28.		17	
China:				
Antung	Mar. 16-22	1		
Chosen				
Chemulpo	Feb 1-28	1		
Seoul	Nov 1-30	1	1	
Do	Feb 1-28	2	1	
Czechoslovakia				December, 1924: Cases, 5.
Do	Jan. 1 31	14		
Egypt:				
Alexandria	Dec. 3-9	1	1	
Do	Mar. 12-18	1		
Cairo	Oct 1-Dec. 23	13	8	
Esthonia				Dec. 1-31, 1924: Cases, 5.
Do	Jan 1-31	4		
France				July-October, 1924: Cases, 7.
Gold Coast				Oct 1-31, 1924. 1 case.
Greece				May-June, 1924: Cases, 116; deaths, 8
Do				July-December, 1924: Cases, 40 deaths, 4.
Athens	Feb. 1-Mar. 10		3	
Saloniki	Nov 17-Dec. 15	3	2	
Do	Jan. 25-31	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from December 27, 1925 to May 8, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Japan				Aug. 1-Nov. 15, 1924 Cases, 2.
Latvia				October-December, 1924: Cases, 30.
Lithuania				August-October, 1924: Cases, 15; deaths, 1.
Do				Jan. 1-31, 1925. Cases, 27; deaths, 2.
Mexico:				
Durango	Dec. 1-31		1	
Do	Mar 15-31	1	1	
Guadalajara	Dec 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District.
Do	Jan 11-Apr. 11	84		
San Luis Potosi	Mar. 8-14		1	
Morocco				November, 1924 Cases, 5.
Palestine				Nov. 12-Dec. 29, 1924. Cases, 10.
Ekrón	Dec 23-29	1		
Jerusalem	do	2		
Do	Jan 20-26	1		
Mikveh Israel	do	1		
Petach-Tikvah	Mar 24-30	1		
Ramleh	Feb. 10-Mar 23	2		
Tiberias	Feb 24-Mar 2	2		
Peru				
Arequipa	Nov 24-Dec 31		3	
Poland				Sept 28, 1924-Jan. 3, 1925 Cases, 751; deaths, 57. Jan 4-Feb 7, 1925 Cases, 581, deaths, 49.
Portugal:				
Lisbon	Dec. 29-Jan. 4		2	
Oporto	Jan. 4-Feb 7	2		
Rumania				January-June, 1924 Cases, 2,906; deaths, 328
Do				July-December, 1924. Cases, 288; deaths, 38
Constanza	Dec 1-20	1		
Do	Feb 1-28	2		
Russia				Jan 1-June 30, 1924: Cases, 95,682 July-November, 1924: Cases, 34,729.
Leningrad	June 29 Nov. 22	12		
Spain				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Sweden:				
Goteborg	Jan. 18-Feb 28	2		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Tunis	Mar 5 25	9	1	
Do	Apr 2-15	18	3	
Turkey.				
Constantinople	Nov 15-Dec. 19	6	1	
Do	Jan 2-Mar 7	9	1	
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 345; deaths, 87. Jan. 1-Feb. 28, 1925. Cases, 159, deaths, 17; native In white population, cases, 12.
Cape Province	Nov. 1-Dec 31	126	24	
Do	Jan 1-Feb 28	74	9	
East London	Nov. 16-22	1		
Do	Jan 18-24	1		
Port Elizabeth	Feb 22-28	1		
Natal	Nov 1-Dec 31	130	50	
Do	Jan. 1-Feb. 28	43	5	
Do	Mar 1-7			Outbreaks.
Durban	Feb 15-21	1		
Orange Free State	Nov. 1-Dec 31	59	8	
Do	Jan. 1-Feb 28	32	3	Native.
Transvaal	Nov. 1-Dec 31	30	5	
Do	Jan. 1-Feb. 28	10		Do.
Yugoslavia				Aug. 3-Oct. 18, 1924: Cases, 17; deaths, 2. Mar. 8-14, 1925: Cases, 1.
Belgrade	Nov. 24-Dec. 28	5		

YELLOW FEVER

Gold Coast	October-November, 1924.	4	4	
Salvador:				
San Salvador	June-October, 1924.	77	28	Last case, Oct. 22, 1924.

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Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

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They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of the public health.

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PUBLIC HEALTH REPORTS

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STATUS OF VACCINATION IN AMERICAN COLLEGES

By ROBERT T. LEGGE, M. D., F. A. C. S., Professor of Hygiene and University Physician, University of California, Berkeley, Calif.

There has been no case of smallpox among the student body of the University of California at Berkeley since 1907, when the regents adopted the rule that all entrants must possess satisfactory evidence of immunity to smallpox before they can be admitted.

In the State of California for the year ending December 31, 1924, there were reported 9,424 cases of smallpox. As this makes a case rate of 2.41 per thousand population, our pro rata expectation of smallpox cases among the student population, calculated on 10,000 individuals, would be 24 cases for that year—if vaccination were not enforced. There were three cases of smallpox among unvaccinated employees, two of whom were janitors, and one was a stenographer. Students who came in contact with these individuals and with others during an epidemic in our city in 1913, when 5 afflicted persons out of 13 cases died, were absolutely protected. It is therefore needless to offer any arguments save the one that compulsory vaccination should be required of all entrants upon matriculation.

Recently I sent to over 50 colleges and universities that are members of the American Student Health Association in the United States a questionnaire for the purpose of ascertaining whether these institutions required from entering students evidence of successful vaccination; whether they accepted vaccination certificates in absence of a scar; and whether they had had any experience with smallpox during the past 10 years. My object was to ascertain whether the compulsory vaccination requirement of the University of California, which is constantly being attacked by certain opponents on the ground that other colleges do not prescribe such a measure, should be abandoned.

Fifty institutions answered the questionnaire, 25 stating that they required entering students to present evidence of successful vaccination and 25 that they did not. Regarding acceptance of vacci-

nation certificates and the occurrence of smallpox in the institutions the answers were as follows:

Institutions stating that evidence of successful vaccination is required of entering students		25
Institutions stating that vaccination is not required, or that it has been required only for the past four years		25
Acceptance of vaccination certificates as such evidence in the absence of vaccination scar	Yes	10
	No	24
	Not applicable	16
Experience with smallpox in the institution within the past 10 years	Smallpox	16
	No smallpox	30
	Not answered	4

Three colleges acknowledged they had had serious epidemics of smallpox during the last decade, but would not volunteer reporting the number of cases. The total number of cases of smallpox during this period of 10 years in 14 colleges was 146.

It is of interest in studying the accompanying tabulated summary of the questionnaire, one column of which contains a brief abstract of the vaccination law of the State in which the institution is located, to note that in the case of Massachusetts and New York their colleges have no record of smallpox. Both of these States have laws providing for the vaccination of school children, which again demonstrates the protection afforded by this public health measure. In contrast is the situation in Utah, where health authorities and school authorities are prohibited from excluding unvaccinated pupils from school or requiring the vaccination of any individual in the community. The University of Utah had a serious smallpox epidemic in 1922.

Princeton University had one case of smallpox before the compulsory vaccination requirement became effective. The University of Missouri reported that the five cases at their institution occurred after the vaccination requirement was enforced. It is the opinion of the writer that the number of cases reported by the latter university is inconsistent, and that the students were not successfully immunized when vaccinated.

Summary of questionnaire

State	Name of institution	Question 1 Require evidence of successful vaccination?	Question 2 Accept certificates?	Question 3: Cases of smallpox during past 10 years	State vaccination law
California	University of California	Yes	No	No	Vaccination school law amended in 1911. Vaccination not now condition of school entrance. Entire act repealed in 1921 and control of smallpox placed under State board of health.
Do	Stanford University	do	Yes	No cases in past 20 years	Do
Colorado	University of Colorado	No; desires to make compulsory		No	Local boards of health may require vaccination or exclusion from school when smallpox is prevalent
Connecticut	Wesleyan University	Yes	No	No; been prevalent in town.	Board of education may require vaccination for school attendance. Board of health may provide for general vaccination at public expense. Penalty for refusal.
Do	Yale University	do	do	No	Do.
Do	Connecticut College for Women	do	Yes	do	Do.
Do	Trinity College	do	do	do	Do.
Georgia	University of Georgia	do	No	do	Board of education empowered to insure vaccination. May require vaccination for school attendance.
Illinois	University of Chicago	All undergraduates	do	do	When smallpox is prevalent, school children not admitted unless successfully vaccinated.
Indiana	University of Indiana	No	do	Yes few cases	Board of health empowered to vaccinate or quarantine suspected persons or persons exposed to smallpox
Iowa	University of Iowa	Since 1921 all but objectors vaccinated.		Number of cases, 64	During smallpox outbreak a city can prohibit unvaccinated persons from schools and public places.
Do	Iowa State College	No	No	1920. epidemic	Do
Kentucky	University of Kentucky	do	do	1 case	Compulsory vaccination
Kansas	Kansas Agricultural College	do	do	15 cases in 10 years, none among vaccinated students.	No compulsory vaccination. Board of health rules provide that unvaccinated child shall be excluded from school 25 days after appearance of smallpox in community.
Massachusetts	Mount Holyoke	Yes; for 15 years	Yes	No	Unvaccinated child not admitted to school unless presenting physician's certificate that such child's health will be endangered by vaccination.
Do	Harvard University	No		do	Do.
Do	Wellesley College	Yes	Yes	do	Do.
Do	Inter. Y M C. A	No		None	Do.
Do	Clark University	do		No record	Do.
Do	Tufts College	do	Yes	No	Do.

Summary of questionnaire—Continued

State	Name of institution	Question 1. Require evidence of successful vaccination?	Question 2. Accept certificates?	Question 3. Cases of smallpox during past 10 years	State vaccination law
Michigan	University of Michigan	Yes, since 1921. Excuse few on written release. Four cases smallpox 1923, *showed no scars*	No	17 cases	Law provides that health officer may offer free vaccination. In case smallpox develops in schools, schools closed and children not permitted to return until vaccinated. If they refuse, they are quarantined 16 days.
Do	Michigan Agricultural College.	Yes, 1924	do	2 cases before compulsory vaccination.	Do.
Minnesota	University of Minnesota	Yes; excuse objectors. During epidemic, all vaccinated.	do	27 cases	No compulsory vaccination except that during epidemic school child is excluded for three weeks, or until vaccinated.
Missouri	Washington University	No		1 case	Exposed persons not having had smallpox or not having been vaccinated within two years must be confined to the premises for 21 days or submit to vaccination.
Do	University of Missouri	Yes	No	5 cases	Do.
New Hampshire	New Hampshire State University.	No	No	do	Pupil must be vaccinated or have had smallpox or present certificate from local board of health that he is an unfit subject for vaccination.
New Jersey	Princeton University	do	do	1 case at home	Boards of education may exclude from school unvaccinated teachers or pupils unless they present physician's certificate that they are unfit subjects for vaccination.
Do	Rutgers College	do	Yes	No	Do.
New York	Rochester University	Yes, school requirement	do	No history	All school children in cities of first and second classes must be vaccinated and in other parts of State when smallpox is declared epidemic by State commissioner of health.
Do	Vassar College	Yes	do	No	Do.
Do	Cornell University	No		do	Do.
Do	College of City of New York	No, conforms to board of health. All school children vaccinated.	No	No record	Do.
Do	Columbia University	No, all New York school children vaccinated		No	Do.
Ohio	Dennison College	Yes	Yes	do	Boards of education may make and enforce rules and regulations to secure vaccination and prevent spread of smallpox in schools.
Do	Miami University	No		1922 3 cases	Do.
Do	Western Reserve University	do	No	No	Do.
Do	Wesleyan University	do		1920. 1 case	Do.
Do	Oberlin College	do		No	Do.
Do	Cincinnati University	Yes; 1924	Yes	do	Do.

Oregon	University of Oregon	No; no State law	No record of vaccination; 50 per cent vaccinated	1918. 10 cases	School boards may prohibit school attendance of unvaccinated child. Slackly enforced. Regulations of State board of health provide for exclusion of unvaccinated children when smallpox exists in community
Pennsylvania	Pennsylvania State College	Yes, school requirement	Yes	No	Pupils must be vaccinated or have had smallpox.
Do	Carnegie Institute	Yes 1924	No	None	Do.
Do	University of Pennsylvania	Yes	do	No	Do.
Do	University of Pittsburgh	do	do	No, 100 cases in city	Do.
Do	Haverford College	No	Records of vaccination	No	Do.
Do	Lafayette College	No, State law requires vaccination in schools		do	
Texas	University of Texas	No	Records of vaccination		In event of epidemic, vaccination may be required of pupils
Do	Christian University	do		No	Do
Washington	State College	do		1 case	Unvaccinated pupils are excluded from school when smallpox exists, unless they are shown to be unfit subjects for vaccination. Isolation period for exposed susceptibles is 18 days.
Utah	University of Utah	No; State law forbids	No	Serious epidemic 1922	Prohibits compulsory vaccination, and exclusion of unvaccinated pupils from school.

THE SUPPLYING OF DRINKING WATER TO VESSELS IN THE UNITED STATES [1]

By JOEL I. CONNOLLY, Associate Sanitary Engineer, United States Public Health Service, and A. E. GORMAN, Chief, Bureau of Sanitary Engineering, Chicago Department of Health, formerly Associate Sanitary Engineer, United States Public Health Service.

INTRODUCTION

The sanitary problems for vessels, particularly large passenger ships, are similar to those of any organized community. Considering the fact that the transient population of some vessels may, in the course of a few months or a year, be from 200,000 to 300,000, the equivalent of the normal population of a large city, it behooves the public health official to give serious consideration to sanitary conditions aboard vessels. To-day this floating city may be the focus of infection for a dangerous communicable disease. To-morrow, before any suspicious symptoms develop, the ship's transient population may have scattered, spreading sickness to cities and towns throughout the country.

By no means the least important public health factor concerned with vessel sanitation is the safety of the ship's water supply. In this paper an attempt is made to outline briefly some of the water supply problems of American vessels in coastwise, river, and Great Lakes services. Government regulations govern these matters both in the United States and Canada. As the operating conditions for American and Canadian vessels are similar, it is not surprising to find much uniformity in the regulations of the two countries. In many instances there is a reciprocal interchange of information between the two in regard to inspections, examinations of water samples, and the issuance of certificates.

Water has many uses aboard a vessel, the most important being for drinking, culinary, ablutionary, fire, boiler, sanitary, cleaning, and ballast purposes. The safety of the water for drinking, culinary, and ablutionary purposes is of great public health significance.

The cost and difficulty of providing an adequate supply of safe water is responsible for the existence of more than one water system aboard a vessel. This is always a potentially dangerous condition and one which the keen public health officer should not overlook.

The quality of the water in which a vessel plies is the controlling factor in the choice of the source of the drinking supply. Because of the salt in sea water, water from overboard can not be used for drinking purposes on coastwise vessels unless it is distilled—an expensive process at best. River waters in the United States are often too grossly polluted by sewage and industrial wastes to be

[1] Read before the Sanitary Engineering Section of the American Public Health Association at the fifty-third annual meeting at Detroit, Oct. 21, 1924.

satisfactory sources for drinking water. The waters of large inland lakes such as the Great Lakes are generally of a high degree of purity, but subject to serious local pollution in the vicinity of cities. Because of these conditions the use of overboard water for drinking and culinary purposes on coastwise vessels is uncommon, whereas on a few inland river vessels and on most Great Lakes vessels, water from this source is used after being properly treated. Two distinct divisions of the vessel water supply problem, then, may be recognized: (1) Where water is obtained from sources ashore, and (2) where it is taken from overboard.

WATER SUPPLIES OBTAINED FROM ASHORE

When water is taken from sources ashore, it is usually from the public supplies of the cities where the ships call. These sources, when satisfactory, are certified for the vessels' use by the Surgeon General of the United States Public Health Service, who bases his action upon a report submitted by the State health department having jurisdiction.

Given a satisfactory source (a safe water) the question resolves itself into one of getting the water aboard in a sanitary manner and of storing and distributing it so that its quality will not be impaired.

One source of danger is the occasional presence of a dual water system on docks and in shipyards, in which case a mistake in hydrants might result in the filling of drinking-water tanks from an impure supply of water intended only for fire protection. Last year two acute outbreaks of diarrhea among the crews of Great Lakes freighters were traced to this cause when vessels were laid up for repairs in shipyards. Such visits to the yards on the Great Lakes are most frequently made in spring and fall, when outfitting for the busy summer season or when getting ready for the winter tie-up. The number of typhoid-fever cases among vessel crews in the past has shown an increase at these seasons. Since measures have been taken to prevent the accidental filling of tanks from impure supplies, the high spring and fall incidences of typhoid have been reduced. On the Lakes the practice has been to identify hydrants by painting white—the emblem of purity—those supplying pure water, and the others red—the danger signal. Mars reports that, on the Pacific Coast, the use of white for fire hydrants is favored, since it makes them more easily visible at night. This diversity of practice clearly indicates the need for uniformity in the identification of hydrants.

A second possible source of danger is the medium used for transporting the water from the hydrant to the vessel. Where delivery is made by hose the exercise of ordinary care will suffice. It is not always possible, however, to use a hose. Such is the case, for instance,

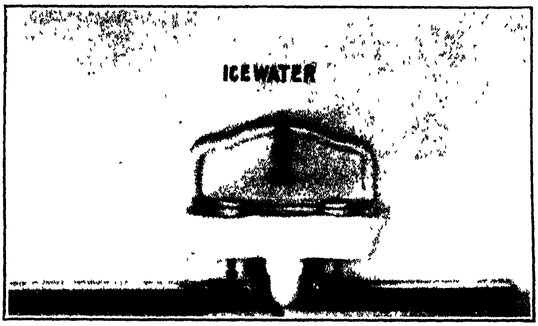
when vessels do not come to the dock. Then, water is usually purchased from a water boat. The water boat is usually a tug equipped with tanks built in the hull and with large capacity pumps. Sullivan has drawn attention to the fact that in salt-water harbors there is little danger of water boats being supplied from overboard, owing to the salinity of the water. In fresh-water harbors, however, such as Philadelphia and New Orleans, this danger is imminent. Water boats supply water for boiler as well as for drinking purposes.

It is the aim of the Public Health Service to have all water boats equipped with special drinking-water supply tanks entirely separate from the hull of the vessel, and also to have independent pumps for delivery purposes and no overboard or bilge connections of any kind. A practical difficulty has been that, because of the use of these vessels as auxiliary fireboats, the owners insist on having overboard connections to the large pumps. Furthermore, the installation of an additional pump in the usually crowded engine room is not easy. Since it is cheaper to pump water from overboard than to buy it from the city, keen competition among water boats may result in trouble unless the water boat owners are fully sensible of their responsibilities. The health officer should be aware of these factors and be governed accordingly.

Where the dock is fixed in position, the hydrants are easily arranged; but complications arise when the dock must be moved back and forth with the rise and fall of the water, as is usually the case on the great inland rivers, such as the Ohio and Mississippi Rivers. In the former instance they should be conveniently located above the wharf floor and close enough to the edge to permit a short hose to reach the vessel. A short hose is desirable in order to guard against the danger of having the end of the hose drop into a polluted harbor. The hose connection should point downward to insure cleanliness.

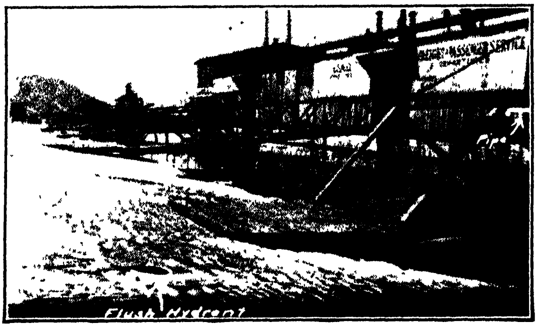
At river docks the wharf usually floats, and therefore rises and falls according to the water level. It is connected to the shore by a landing stage long enough to reach dry ground while the wharf boat is floating in the stream with steamers lying alongside. The usual provision consists of a pipe line from the shore end of the landing stage to the river side of the wharf boat, where the vessels dock. Each end has a hose coupling, the outer one for the short hose to the vessel and the other for a similar short hose to the nearest of a series of hydrants on the incline or bank. These hydrants are situated at different levels, so as to permit the use of a short hose at any river stage, and are in boxes below ground, so that they will not interfere with trucking on the incline or constitute a danger to navigation when submerged. It is necessary to guard against having the pipes and hydrants washed out during floods or covered with thick deposits of mud.

The old —Drinking water was formerly stored in such containers as these, open or with removable covers, from which the water was dipped with the common drinking cup The ice was in contact with the water

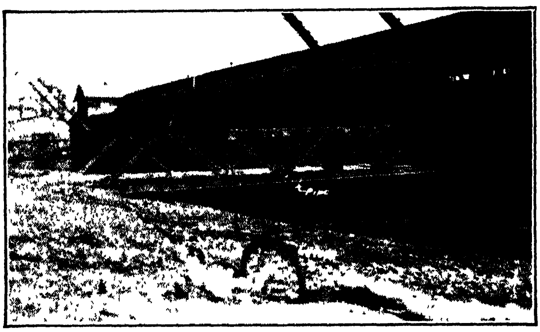


The new - Present day bubbler fountain supplying pure drinking water, cooled by passing through a coil of pipe in the ice box The water does not come in contact with the ice (Type of fountain now recommended is that having angle jet, protected orifice, and sanitary guard -- Ed)

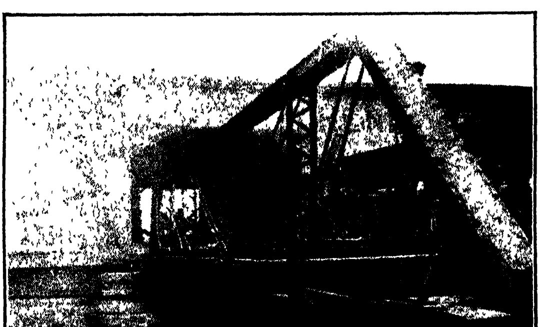
Contrast of old and new - The milk can, formerly used, from which the water was obtained by means of the common drinking cup, and the present-day water tank in which the water is chilled without contact with ice, delivered by pipes to taps, and drawn in individual paper cups from slot machine on front of cooler (Excursion steamer at Pittsburgh, Pa)



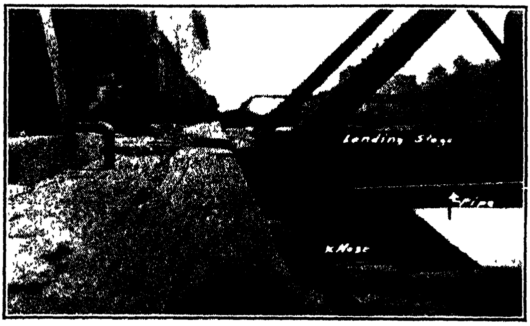
Levee at Memphis, Tenn., showing a flush hydrant, with cover removed, near the end of the landing stage, ready to be connected by hose to the pipe on the landing stage leading across wharf boat to steamer



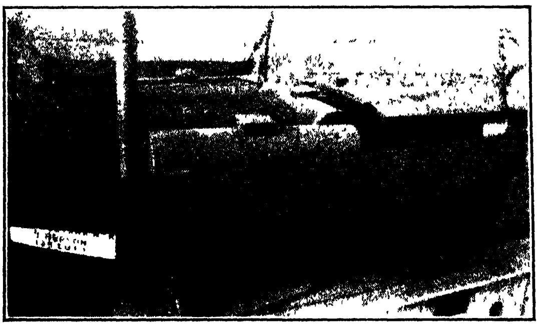
Levee at Cincinnati, Ohio showing hose conducting water from the flush hydrant in the foreground to the pipe line along the bottom chord of the landing stage



Landing stage at Paducah, Ky., wharf boat, showing pipe line with hose connected

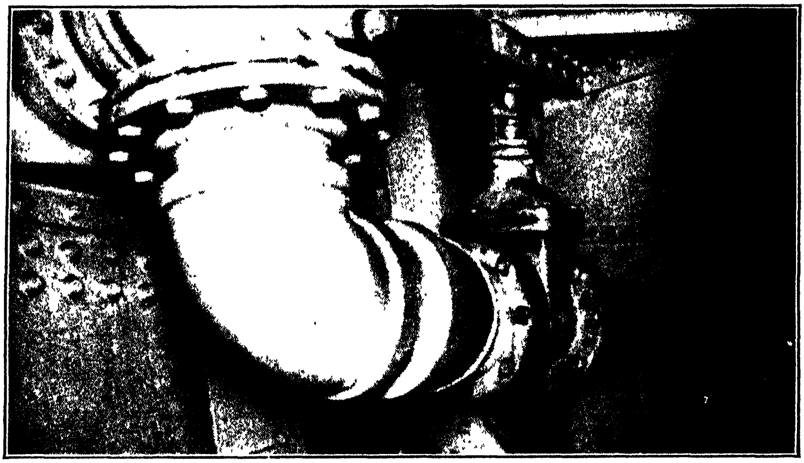


Detail showing flexible permanent hose connection of pipe on wharf boat with pipe on landing stage, necessitated by the raising of the stage Paducah, Ky

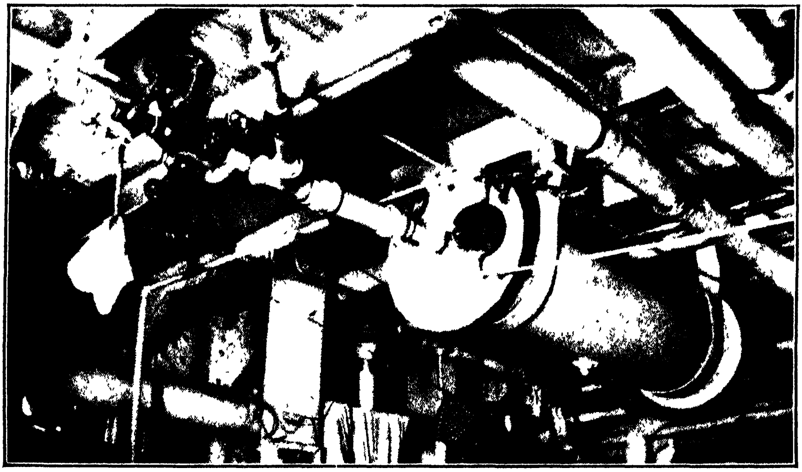


Storage tanks for gravity distribution system Overlapping covers are locked Where tanks are in close proximity to each other as they are here, drinking-water tanks are identified by signs

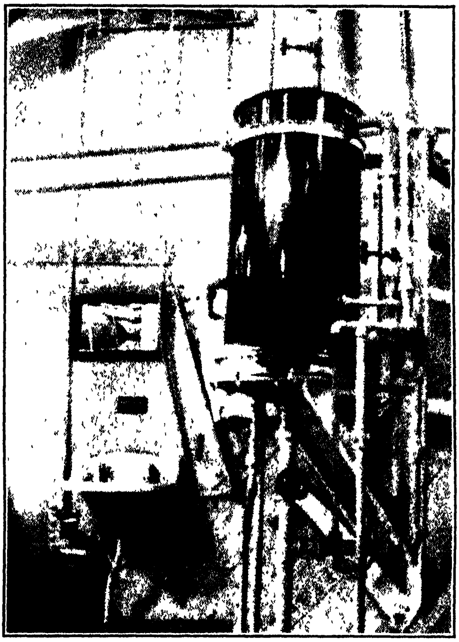
Hydrant on dock, as used on the Great Lakes and the seacoast. Short hose extends to pipe on vessel alongside of dock. This view shows the desirability of having short hose in order to avoid having one end fall into polluted harbor water. Detroit, Mich.



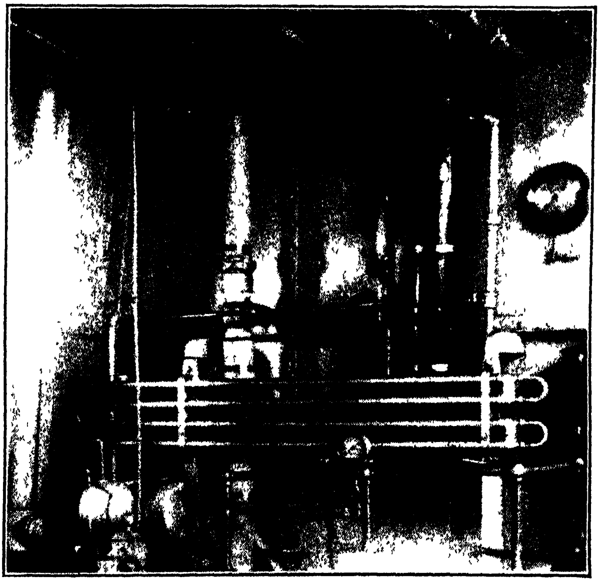
A 12-inch sea-cock connection (on a large passenger vessel) used in taking drinking water from overboard Below is shown a small "weep pipe" used for draining the large pipe when it is not in use and also for detecting leakage of the large valve Cleveland, Ohio



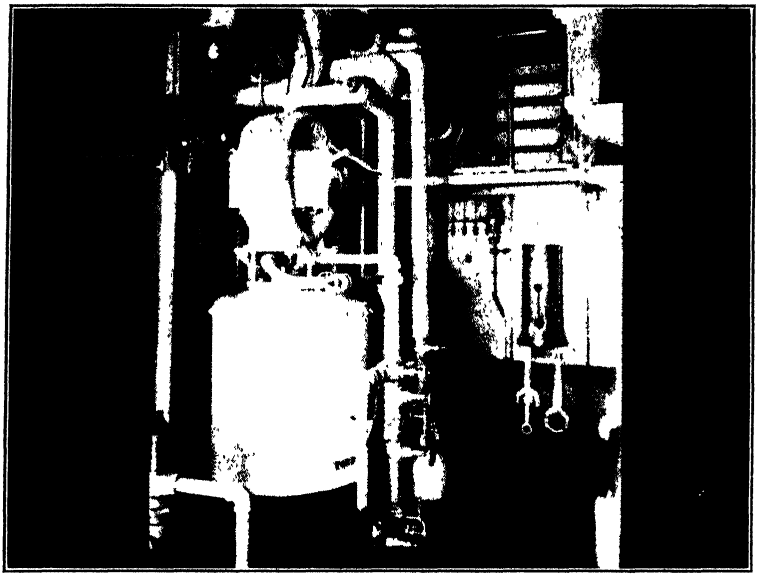
A step in the development of apparatus for treating water from overboard A tank, equipped with thermostatically controlled valves, for holding water at high temperature for definite periods Detroit, Mich. (This apparatus is not now used)



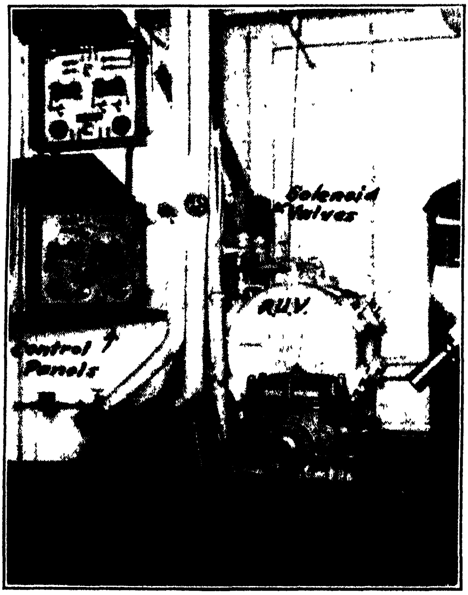
Polar still for treating water from overboard that is to be used for drinking and culinary purposes. Another supply is provided for washing, and warning signs, as shown, are posted over the washbowl.



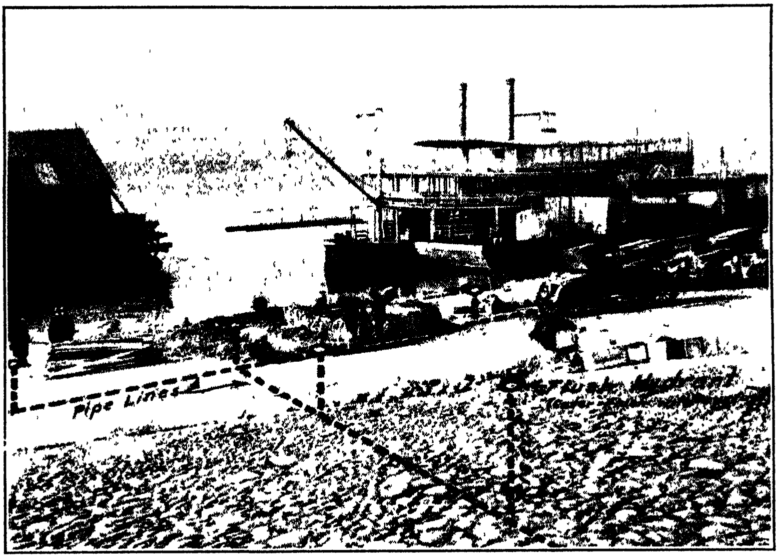
Tripure still, heat exchange, control tank, and distributing pump



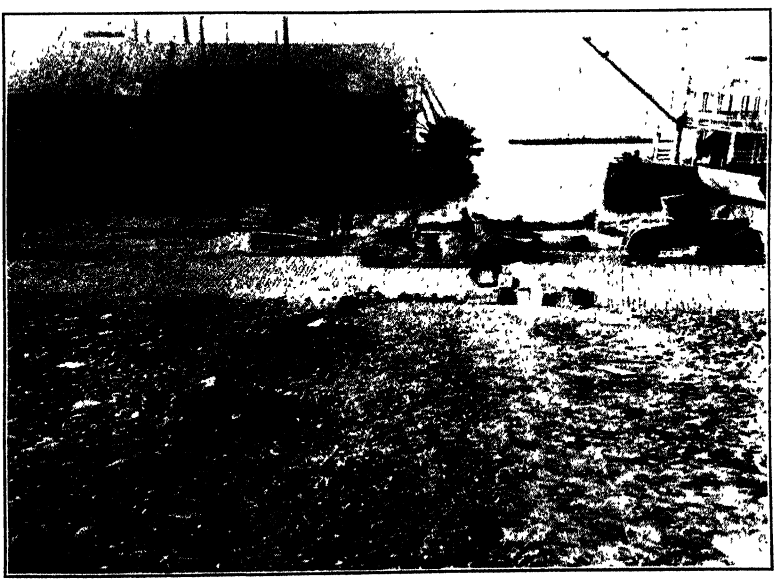
Filter and R U. V sterilizer Alum pot for coagulent is shown at right of filter, together with the control valves Chicago, Ill



Two R U V sterilizers used in series, pump, control panels, and solenoid valves. The latter prevent the passage of water through the sterilizers until the voltage across the lamp becomes high enough for effective disinfection Buffalo, N Y.



Pittsburgh levee during construction of pipe line for vessels Dotted lines show the arrangement of pipes below the ground surface, with risers at intervals leading to hydrants flush with the surface This use of flush hydrants avoids interference with trucking on the incline



Levee at Pittsburgh, Pa., during construction of water mains for supplying city water to vessels, showing usual arrangement of wharf boat and landing stage, with steamer beyond the wharf boat

Before these arrangements were made, the drinking water was taken aboard in barrels, milk cans, or any other containers that fancy or convenience might suggest, with, consequently, almost continuous contamination. Now, water may be obtained in a sanitary manner at frequent intervals along all inland rivers on which there is any appreciable amount of shipping. In some cases the cities have installed the necessary pipe lines and hydrants as a public health measure, notably at Pittsburgh, Pa., and Memphis, Tenn. At other places the vessel companies have constructed their own service lines on the incline.

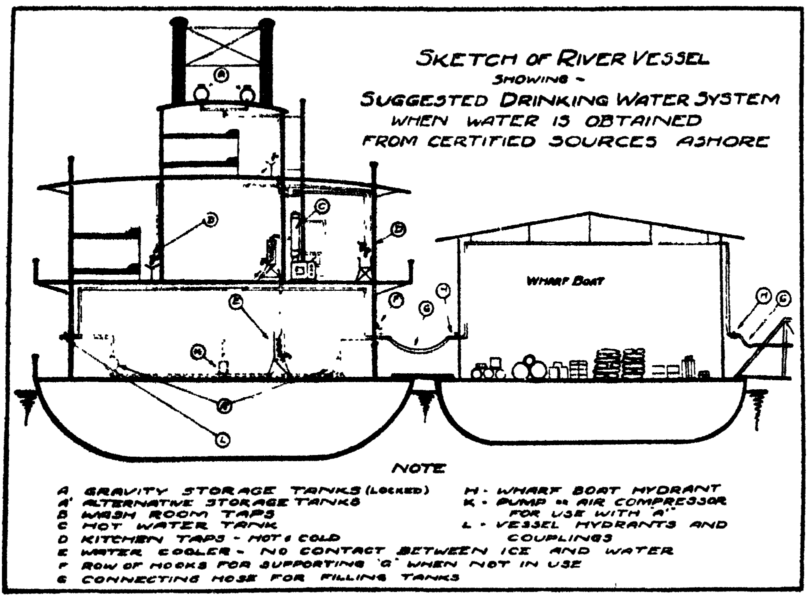


FIG. 1

The cooperation of city water departments in this matter and of city and State health departments in the collection and examination of samples of drinking water from vessels has been extremely helpful in securing improvements in the water supplies.

A hose should be reserved for filling the drinking-water tanks alone, and it should, therefore, be properly identified. It should be provided with screw couplings at both ends and when not in use should be stored on a reel in a clean container either on the dock or on the vessel, preferably the latter. A licensed officer is usually made responsible for its proper care.

On the vessel, pipes should be run to the sides at convenient places, ending in down-turned hose couplings. The couplings should be so located as to permit a minimum length of hose to reach the hydrant at the dock. They should be well above the deck and should be

capped when not in use. Many vessels have the drinking-water filling pipes and distribution pipes painted blue to distinguish them and to guard against accidental cross connections to other water pipes. It is anticipated that eventually this practice will be universal.

The storage tanks are of two kinds: (1) Those for gravity distribution systems, which are, necessarily, on the upper decks, and (2) those with pressure systems, which are commonly located in the hold of the ship.

If gravity tanks are exposed, they should be protected against freezing by insulation or steam pipes. To avoid mistakes when being filled the tanks used for drinking water should not be in close proximity to other tanks, unless locked and properly identified by signs.

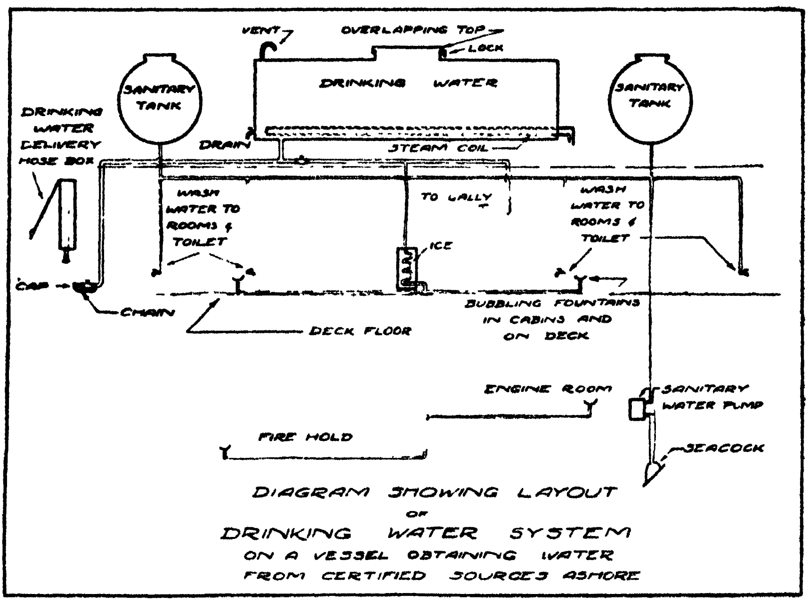


FIG. 2

They should have vents ending in goosenecks (that is, pipes with the ends bent downward) and overlapping lids. Delivery is made to these tanks direct from ashore by the city pressure, when connected as outlined above, thereby eliminating pumping. Large gravity feed tanks have the disadvantage of putting the weight where it tends to make the vessels top-heavy, and therefore care must be used in selecting their location.

Tanks in pressure systems are usually in the forward or after peak, or end compartments, of the vessel, or in the shaft alley between the engine room and the stern. Tanks used for the storage of drinking water should not be formed even in part by the hull, a deck, or a bulkhead of the vessel, lest the loosening of a plate permit the entrance

of polluted harbor or bilge water. As a result of impact in docking and of vibration, the shearing of rivets often causes plates to start and seams to open, especially in the bow and stern. This precaution is not so important in the case of tanks storing water for subsequent treatment. The presence of drainage pipes or soil pipes passing through the tanks is a condition which at one time was fairly common, but is now, happily, a thing of the past.

To permit the complete draining of the tanks they should be equipped with proper drains. These should be above the level of the bilge water. If entrance to the tanks is through a deck manhole, the collar should extend above the deck several inches to protect the opening. The cover should be water-tight, preferably with a plate and gasket bolted to a flange. Care must be taken to guard against bolt holes or other openings in the top of the tank through which contamination might enter. Before passing upon the condition of a water system on a vessel, the tanks are carefully examined for openings and leaks. The tanks should not be located very close to boiler rooms because of the temperature, which gives rise to high bacterial counts and requires more cooling before a palatable water can be delivered. One of the forward compartments and the shaft alley are good locations for the tanks, as these places are usually cool and not readily adaptable for other purposes. Peak tanks, forward or aft, are usually undesirable for the storage of water because it is common practice to put crews' toilets on the main deck above them.

The tanks, almost without exception, are made of steel and therefore require protection against rust, especially in case distilled water is stored in them. Coatings of various kinds are used, particularly cement grout, bituminous materials, enamel, and glass. Ordinarily entrance into the tanks is necessary but once a year, for repairs and renewing the protective coating, and entrance for other purposes is forbidden. After they have been entered they must be sterilized, for which purpose a solution of calcium hypochlorite, 1 pound to 5,000 gallons, is commonly used, followed by thorough flushing to get rid of the taste.

The piping systems for cooling and distributing the water also present various health hazards. Cooling must be done in such a manner that the ice does not come into contact with the water. Two methods are most common: (1) A coil of pipe in an ice box, preferably close to the bubbler or outlet where the water is to be drawn; and (2) a scuttle-butt in connection with the refrigerating machine and a special circulating system for ice water, having its own pump. The circulating system is necessary with ice machines to avoid having the water in the scuttle-butt freeze and burst it.

Special pumps are required for the water used for drinking and culinary purposes, wholly disconnected from impure water systems, the bilge, or sea cocks. The use of compressed air, as in Pullman cars, is not considered advisable, as it involves an extra unit of machinery—the air compressor.

One of the greatest sources of trouble in the past has been the existence of cross connections in the distribution system or used in attempting to make one pump serve for both drinking water and other water (such as bilge water) in emergencies. A number of serious epidemics of water-borne diseases have been traced to cross connections on vessels.[1] This danger is an insidious one because the piping systems on the larger vessels are extensive and it is easy to have an accidental cross connection in some out-of-the-way corner. The most common location of such connections has been, however, in the engine room and boiler room, especially in the manifold system, the boiler-feed-water system, and in connection with pumps intended to serve a double purpose in emergencies. Another type is the by-pass around treatment apparatus. All these cross connections are expressly forbidden by regulations and must be removed wherever found.

Sometimes a special fitting is kept for installation, as an emergency by-pass around treatment apparatus in case of a break down. It is painted red as a danger signal, and whenever it is used the water must be disinfected by some special means, such as by emergency chlorination with hypochlorite solution, and the district engineer of the Public Health Service in charge must be notified of the time during which the by-pass was in use and of the safeguards employed during that time.

The full line in Figure 3 shows the improvement that has taken place in the drinking-water supplies on vessels when the supplies are taken from sources ashore, as revealed by the proportion of samples which showed the presence of *B. coli* upon examination.

WATER SUPPLIED FROM OVERBOARD

Water taken on vessels from overboard is delivered through sea cocks. These sea cocks are located below the water line and, therefore, there is always a positive pressure against the valves, necessitating tight connections to prevent seepage. Invariably harbor waters are grossly polluted, and, therefore, the sea cock is always a dangerous connection to any drinking-water system. The clogging

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[1] Outbreak of Gastro-Enteritis and Typhoid Fever Due to Drinking Water on Excursion Steamer. By L. L. Lumsden Pub. Health Rep., Nov. 29, 1912.
The Water Supplies of Ships. By Hugh de Valin. Pub. Health Rep., Feb. 13, 1914.
Drinking Water on Interstate Carriers. By J. O. Cobb, C. L. Williams, and H. P. Letton. Pub. Health Rep., Oct. 13, 1916.
Epidemics from Steamboat Water Supplies. By Joel I. Connolly. Transactions of the Second Annual Conference of State Sanitary Engineers. Pub. Health Bull. No. 123, Dec. 1921.

of valves by débris and the accidental opening of or failure to close sea-cock valves in port are very serious matters to be considered when overboard water is used for the drinking supply. Even in the outer waters of the Great Lakes the taking on of drinking water from overboard is fraught with dangers. Vessels usually ply on well-defined courses, and during the heavy shipping season there may be distinct lanes of pollution along these courses due to the universal practice of discharging sewage and wastes overboard.

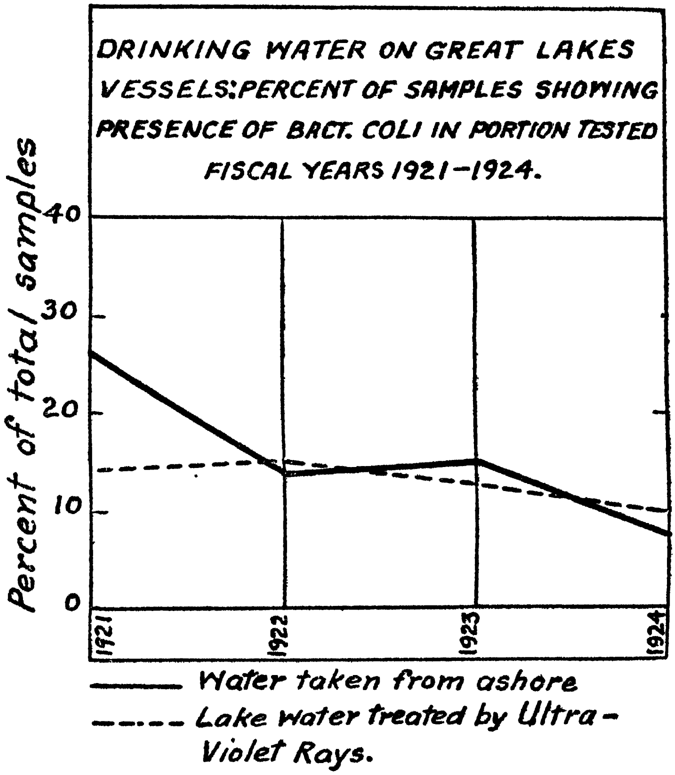

FIG. 3

When possible, the sea cock through which the drinking-water is taken aboard should be independent of all other sea cock connections. Naval architects usually design to place sea cocks convenient to the engine room. Not infrequently these intakes are set without regard to the toilet outlets. The latter are usually near the water line. On side-wheelers the paddles often bring the discharged filth down to the depth of the sea cock. Sea cocks for drinking-water inlets should be forward of all toilet outlets or at least on the opposite side of the vessel from such outlets.

Not infrequently sea cocks are interconnected by large lines of horizontal piping. The fouling of any one of these lines is a difficult

matter to correct. It is good practice to have double valves on all sea cocks serving the drinking-water system and to have an open valve or "weep pipe" between them. This arrangement gives warning of any leakage by the outer valve. The locking of sea-cock valves has been successfully practiced on some vessels.

Storage tanks for drinking-water are usually of two groups: one for the raw water and the other for the treated water, adequately protected from pollution by bilge water, and well vented. All units should be in duplicate. Delivery to raw-water tanks may be by gravity directly through the sea cock or by pump. In either case, before filling the tanks it is good practice to waste the first portion of water entering the sea cock to permit a thorough flushing. A vessel should have adequate tank capacity to meet maximum conditions for its cruising range between desirable watering places.

WATER TREATMENT METHODS

Distillation is a common method of treating water to be used for drinking purposes on vessels. Water so obtained is, of course, safe; but it not infrequently has a "flat" disagreeable taste, is expensive to produce, and attacks metallic containers. Because of the cost of production, the supply is usually limited, necessitating a second source of supply for ablutionary purposes, which is at best an undesirable arrangement. Distillation is the common method of treatment on Great Lakes freight vessels and inland river vessels.

Other methods of treating "overboard" water to be used for drinking purposes on vessels are treatment by ultra-violet rays, by ozone, and by hypochlorites. Filtration as a preliminary treatment is required for efficient disinfection in each case, since the raw waters may at times contain considerable organic matter in suspension.

The ultra-violet ray process for disinfection is used on 33 large passenger vessels of the Great Lakes fleet. It has given very satisfactory service where it is properly operated. In this process it is important that the proper voltage be maintained within reasonable limits and that the quartz tube and mercury vapor lamp be kept clean at all times. Weekly cleaning is desirable. Equipment of this type on Great Lakes vessels is provided with electrically controlled valves to prevent automatically the passage of water through the sterilizer when the voltage is too low for efficient disinfection.

The dotted line in Figure 3 gives the percentage of samples of water taken from overboard, filtered, and treated by ultra-violet rays upon Great Lakes vessels, that show the presence of *B. coli.* Although there is a less marked improvement during the past four years than with water taken from ashore, the effect of improved apparatus and better operation is evident.

On two Great Lakes passenger vessels and two Mississippi River excursion boats ozone water treatment apparatus have been operated. Where glass dielectrics were used, considerable difficulty was experienced with breakage of dielectric plates due to the heat of short circuits resulting from moisture being deposited on the plates. Where the mica dielectrics were used and the contact of ozone and water was sufficiently intimate and prolonged, satisfactory results have been obtained.

Last year, apparatus were installed on two large Great Lakes passenger vessels and on a few freighters for treating overboard water by a solution of sodium hypochlorite. The stock solution is delivered to the water at the desired rate in proportion to the pumpage, through an injector supplied by a revolving disk geared to a water meter. The disk, which dips into the hypochlorite solution, contains, in its periphery, a series of holes which, owing to surface tension, retain definite quantities of the solution, depending on the diameter of the hole. With this method, control over the adequacy of treatment should be carried out by tests for residual chlorine. Serious objections as regards the taste of the water have not been reported as yet.

In considering these three treatment processes, as compared with distillation, it should be borne in mind that any of these methods can economically produce a safe water in quantities available for all domestic purposes—drinking, culinary, and ablutionary. This is a distinct public health advantage, as dual water systems serving the crew and passengers are potentially dangerous.

Careful operation is necessary with any of these treatment methods if good results are to be obtained.

An important factor in the future control of the quality of drinking water is the growing practice of submitting the plans of new vessels to the sanitary officers of the Government before the vessels are built. In this way an opportunity is given for criticisms at a stage which will permit the water system of the vessels to be built right, thus avoiding the necessity for later changes.

RESULTS OF SANITARY CONTROL OVER DRINKING WATER

The typhoid fever rate of a community is generally accepted as furnishing an indication of the sanitary quality of its drinking water and food. Unfortunately it is difficult to get statistics for the passengers, as they come from so many localities. The reservation book of a single Great Lakes tourist vessel will frequently show the names of passengers from California and Maine. There is, however, a yardstick that we can use—the typhoid-fever rate for the crews of vessels. This information is available from the records of the United States marine hospitals.

It is estimated that four and a half million passages are taken on Great Lakes vessels alone each season. The crews which man this fleet represent about 25,000 men. During the five years, 1901 to 1905, an average of over 150 typhoid-fever cases a year among Great Lakes seamen were hospitalized at the marine hospitals. During the past five years this average has been less than 20. Figure 4 shows the drop in the typhoid-fever rates of Great Lakes seamen hospitalized at United States marine hospitals in the 10 years from 1915 to 1924, inclusive, during which time the United

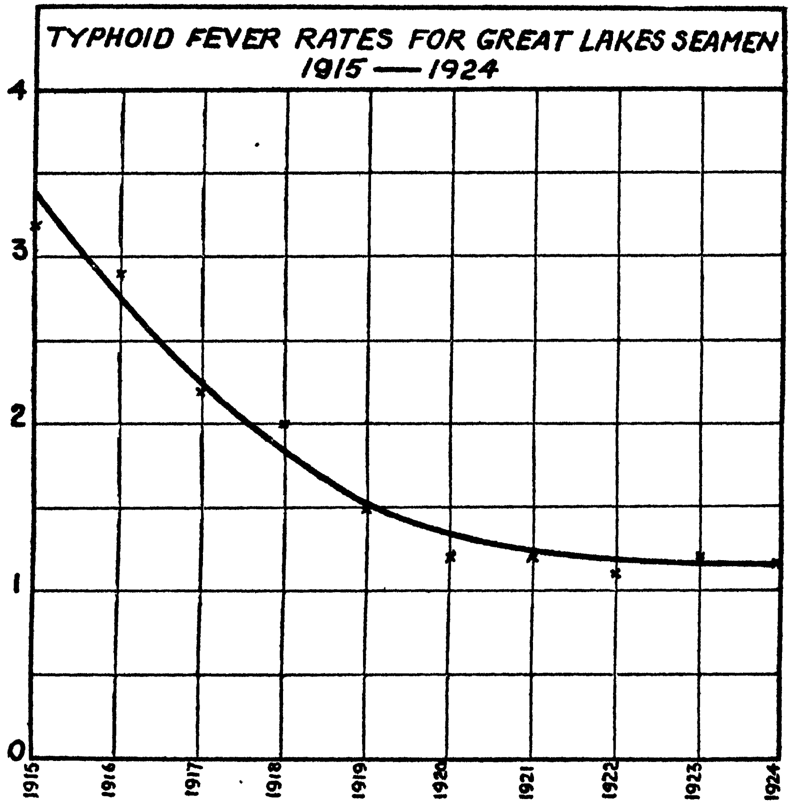

FIG 4

States Public Health Service has been active in securing improvements in sanitary conditions on the vessels.

There is a small amount of typhoid which is due to contacts, or which is contracted by members of crews ashore, which can not be attributed to conditions on the vessels, and it is believed that this minimum is being approached at present. This belief is strengthened by the fact that the rate curve shown in Figure 4 is becoming asymptotic. The large number of crews, each constituting its own small community, makes the situation comparable to

a rural section, except that there are probably more dangers to be guarded against on shipboard, such as the presence of several water

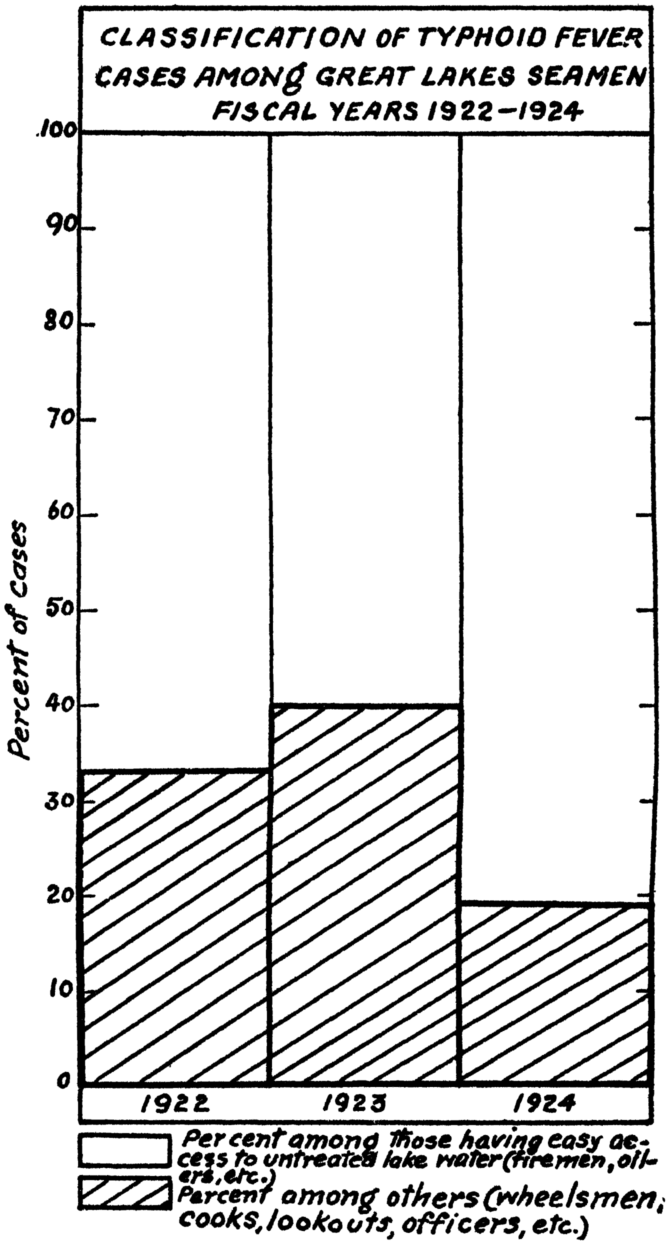

FIG. 5

systems. The present typhoid-fever death rate among Great Lakes seamen—8 per 100,000—compares favorably with the average

typhoid rates in rural communities where the population is similarly spread out in many small groups.

Men working in boiler rooms and engine rooms, such as firemen, coal passers, oilers, etc., have easy access to untreated overboard water, and will sometimes drink it because of its coolness and taste (especially where the drinking water is distilled), in spite of warning signs posted in conspicuous places. Figure 5 shows that by far the largest proportion of typhoid-fever cases among seamen hospitalized during the past few years have come from this class, while the members of the crew who do not find raw water so conveniently accessible are relatively free from the disease.

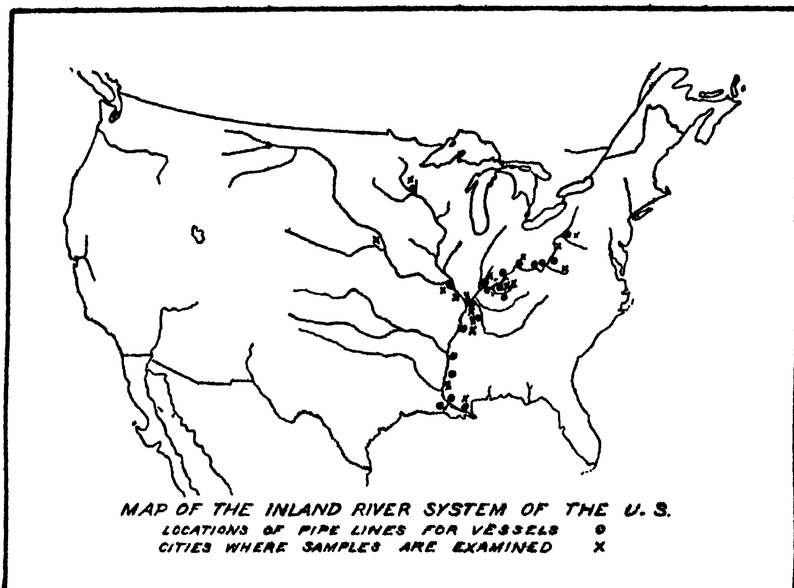

FIG. 6

It is believed that the typhoid fever that now exists is due more to individual ignorance or carelessness than to a lack of safe drinking water, as shown by the fact that last year not more than one case was reported from any one vessel. The value of the supervision over water supplies is indicated by a much higher typhoid rate on vessels where, because of special conditions, the Government control is limited, than on other vessels.

The increasing degree of contamination of our rivers, lakes, and coastal waters, and the growth in transportation by water, are making vessel sanitation, and especially the furnishing of a safe drinking water, a problem of increasing importance and difficulty. However, with the cooperation of the vessel companies and their great associations (such as the Lake Carriers' Association, which

embraces in its membership about 80 per cent of Great Lakes tonnage), the various city and State health departments, and the Governments of the United States and Canada, encouraging progress is being made, and we can look into the future with hope and confidence.

CONFERENCE OF STATE AND TERRITORIAL HEALTH OFFICERS WITH THE PUBLIC HEALTH SERVICE

PROGRAM OF THE TWENTY-THIRD ANNUAL CONFERENCE TO BE HELD JUNE 1 AND 2, 1925, AT THE BUREAU OF THE PUBLIC HEALTH SERVICE, WASHINGTON, D. C.

The following is the program of the twenty-third annual conference of State and Territorial health officers with the United States Public Health Service, to be held on June 1 and 2, 1925, at the Bureau of the Public Health Service, corner of New Jersey Avenue and B Street SE., Washington, D. C.:

Morning Session, June 1—9.30 a. m.

1. Opening address: Dr. Hugh S. Cumming.
2. Roll call.
3. A plan for the establishment of a morbidity registration area.

Dr. B. J. Lloyd will open this discussion along the following lines:

(*a*) The data that should be obtained.
(*b*) The present status of the collection of such data in the United States.
(*c*) The facilities which the Federal Government is able to furnish.
(*d*) A plan to establish a morbidity registration area comparable to the birth and death registration areas of the Bureau of the Census.

Under the latter head will be presented a map of a proposed initial area and a system of checks intended to determine the eligibility of a given area for inclusion.

4. A State-wide program of milk control.

The program recommended by the Public Health Service is as follows:

(*a*) Standardization of milk sanitation in the United States.
(*b*) Periodic measurement of progress of milk sanitation in the United States.
(*c*) Special investigations consisting of (1) milk-borne disease prevalence; (2) design and operation of pasteurizatiom machinery; (3)sterilization of milk utensils and equipment; (4) refrigeration, and others.

This program has been adopted by 6 States and 33 cities. It is hoped that the States and cities of the country can agree upon this or some equally effective program as standard. The discussion will be opened by Dr. A. M. Stimson and Associate Sanitary Engineer L. C. Frank.

5. The occurrence of plague in the United States since the last annual conference, and control measures taken.

Within the past 12 months, human and rodent plague have occurred at Los Angeles, Calif., and rodent plague has appeared at Oakland, Calif., and New Orleans, La. Dr. W. F. Draper will open the discussion on plague by reviewing briefly its past history in the places mentioned and describing the present status of eradicative work.

Afternoon Session, June 1—2 p. m.

6. The routine reporting of county health work.

Several forms for the reporting of the work of county health departments are in use by the several agencies concerned. A single report form covering all salient features of county health work and acceptable to all agencies would be of great advantage. Dr. L. L. Lumsden will open the discussion on this subject.

7. The practicability and desirability of utilizing the services of advanced and selected medical students during the summer months in the field of public health.

It has been suggested that desirable medical school graduates might enter the field of public health if they became interested in the work while they were undergraduates. It is desirable to ascertain whether a plan can be worked out whereby medical students can be given summer employment in State health work. Dr. John A. Ferrell will open the discussion on this subject.

Morning Session, June 2—9.30 a. m.

8. Stream pollution as a public health matter.

At the present time the majority of cities discharge their sewage into waterways without treatment. There are well-established measures by which any city may purify its own sewage and it may procure a water supply of safe quality by applying modern methods of water purification.

With the continuing rapid growth of urban population, it seems inevitable that inland streams must become so polluted that practicable methods of artificial water purification will no longer suffice. It may be necessary, perhaps in a not far distant future, to establish some system for the control of sewage pollution in entire river systems not only to prevent local nuisance, but to protect water supplies taken at more or less distant points downstream.

Dr. W. H. Frost, of the Public Health Service, will open the discussion on this subject.

Dr. J. E. Monger will present a report on phenol pollution of public water supplies.

9. Cooperative measures for the sanitation of shellfish areas and shucking houses.

Dr. W. F. Draper will review briefly the incidents leading up to the present work of shellfish sanitation in cooperation with State and local authorities. The present status of these activities will be described. Dr. W. H. Frost will present a progress report on the work of the committee appointed by the Surgeon General to assist in carrying out the resolutions of the shellfish conference on February 19, 1925.

10. Progress report of studies of administrative health practice.

Dr. Paul Preble will give a brief review of the events leading to the establishment of the office of administrative health practice in the Public Health Service. He will present a summary of the methods employed in the 1924 survey of 100 of the largest cities. He will describe the present status of the work and the impressions gained thus far.

Afternoon Session, June 2—2 p. m.

The conference will meet at the Hygienic Laboratory, where it will be divided into small groups for the presentation of demonstrations on the following subjects:

The new scarlet fever preparations: Doctor McCoy.
Narcotic drug addiction: Doctor Kolb.
Considerations in smallpox control: Doctors Leake and Armstrong.
Tularaemia: Doctor Francis.

PAN AMERICAN SANITARY CONVENTION PROCLAIMED APRIL 28, 1925

The President's instrument of ratification of the Pan American Sanitary Convention signed at Habana, Cuba, on November 14, 1924, was deposited with the Government of Cuba on April 13, 1925, and the convention was proclaimed by the President on April 28, 1925. The ratification of this convention, adopting the Pan American Sanitary Code, was advised by the Senate on February 13, 1925.[a]

DEATHS DURING WEEK ENDED MAY 9, 1925

Summary of information received by telegraph from industrial insurance companies for week ended May 9, 1925, and corresponding week of 1924. (From the Weekly Health Index, May 12, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 9, 1925	Corresponding week, 1924
Policies in force	59, 726, 946	55, 940, 230
Number of death claims	11, 744	11, 488
Death claims per 1,000 policies in force, annual rate	10.3	10.7

Deaths from all causes in certain large cities of the United States during the week ended May 9, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, May 12, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended May 9, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended May 9, 1925 [2]
	Total deaths	Death rate [1]		Week ended May 9, 1925	Corresponding week, 1924	
Total (62 cities)	6, 758	13. 2	[3] 13. 2	773	[3] 846	
Akron	31			5	5	55
Albany [4]	37	16. 1	19. 4	7	5	156
Atlanta	75	16 8	18 8	7	14	
Baltimore [4]	253	16. 6	15. 3	25	21	73
Birmingham	56	14. 2	18. 2	6	5	
Boston	224	14. 9	14. 5	27	31	71
Bridgeport	23			2	2	32
Cambridge	26	12 1	13. 5	4	1	69
Camden	34	13. 8	13. 2	5	9	82
Chicago [4]	706	12. 3	12. 0	97	83	86
Cincinnati	114	14 5	14. 4	7	11	41
Cleveland	187	10. 4	10 0	19	26	47
Columbus	85	16. 2	13. 2	7	5	66
Dallas	53	14. 3	11. 7	7	8	
Denver	77			9	10	
Des Moines	38	13. 3	15. 1	4	5	69
Detroit	258			46	56	78
Duluth	11	5. 2	6. 7	1	1	21
Erie	26			1	4	20
Fall River [4]	32	13. 8	16. 4	11	6	158
Flint	19			4	2	66
Fort Worth	21	7. 2	7. 7	1	2	

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 61 cities.
[4] Deaths for week ended Friday, May 8, 1925.

[a] Public Health Reports, Mar. 13, 1925, pp. 483-502. Reprint No. 994.

Deaths from all causes in certain large cities of the United States during the week ended May 9, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, May 12, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended May 9, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended May 9, 1925
	Total deaths	Death rate		Week ended May 9, 1925	Corresponding week, 1924	
Grand Rapids	34	11.8	11.2	5	8	78
Houston	64			11	4	
Indianapolis	83	12.1	16.2	10	22	69
Jacksonville, Fla	34	16.9	20.9	3	9	67
Jersey City	83	13.7	13.0	6	13	42
Kansas City, Kans	39	16.4	10.7	5	2	105
Kansas City, Mo	103	14.6	13.6	14	9	
Los Angeles	223			29	34	81
Louisville	78	15.7	17.8	7	9	61
Lowell	35	15.7	14.4	3	4	52
Lynn	21	10.5	10.8	4	2	106
Memphis	57	17.0	13.9	6	5	
Milwaukee	91	9.5	11.8	8	20	37
Minneapolis	94	11.5	12.4	14	8	75
Nashville [4]	36	15.1	11.0	5	3	
New Bedford	35	13.5	10.6	6	4	100
New Haven	36	10.5	12.7	2	6	26
New Orleans	142	17.9	17.2	18	15	
New York	1,486	12.7	13.5	165	216	66
Bronx Borough	168	9.7	9.6	16	20	55
Brooklyn Borough	506	11.8	12.0	59	56	62
Manhattan Borough	637	14.7	16.1	73	108	73
Queens Borough	132	12.0	13.7	14	23	69
Richmond Borough	43	16.8	20.3	3	9	54
Newark, N. J	93	10.7	11.8	19	16	87
Norfolk	26	8.0	10.8	1	5	18
Oakland	49	10.1	12.7	3	5	35
Oklahoma City	17			1	3	
Omaha	34	8.4	11.5	4	8	39
Paterson	29	10.7	10.0	2	4	34
Philadelphia	571	15.0	13.2	69	52	87
Pittsburgh	171	14.4	13.3	23	20	81
Portland, Oreg	84	15.5	13.9	7	3	72
Providence	67	14.3	16.3	13	12	104
Richmond	42	11.7	13.1	5	3	61
Rochester	89	14.0	13.3	6	13	47
St. Louis	205	13.0	13.2	15	11	
St. Paul	52	11.0	9.8	6	9	51
Salt Lake City [4]	27	10.8	12.6	4	5	63
San Antonio	67	17.6	17.7	10	14	
San Francisco	138	12.9	12.6	7	14	40
Schenectady	27	13.8	14.5	3	3	85
Seattle	80			3	8	31
Somerville	26	13.3	11.4	2	2	54
Spokane	24			1	4	22
Springfield, Mass	26	8.9	13.7	2	7	30
Syracuse	59	10.1	13.6	9	4	113
Tacoma	19	9.5	11.1	1	2	24
Toledo	67	12.2	12.5	4	8	36
Trenton	49	19.4	18.1	7	10	114
Utica	32	15.6		3		62
Washington, D. C	125	13.1	13.6	13	9	73
Waterbury	24			4	5	88
Wilmington, Del	29	12.4	9.6	3	3	68
Worcester	56	14.7	13.1	6	5	69
Yonkers	28	13.1	9.0	7	2	154
Youngstown	29	9.5	9.4	3	9	38

[4] Deaths for week ended Friday, May 8, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended May 16, 1925

ARIZONA	Cases
Chicken pox	5
Diphtheria	2
Measles	54
Mumps	2
Scarlet fever	7
Smallpox	2
Trachoma	1
Tuberculosis	13
Typhoid fever	4
Whooping cough	5

ARKANSAS	Cases
Chicken pox	20
Diphtheria	1
Hookworm disease	1
Influenza	45
Malaria	58
Measles	13
Mumps	35
Paratyphoid fever	1
Pellagra	16
Scarlet fever	4
Smallpox	4
Trachoma	2
Tuberculosis	19
Typhoid fever	9
Whooping cough	4

COLORADO

(Exclusive of Denver)

	Cases
Chicken pox	5
Diphtheria	8
Influenza	
Mumps	17
Pneumonia	7
Scarlet fever	13
Tuberculosis	37
Typhoid fever	3
Vincent's angina	1
Whooping cough	7

CONNECTICUT	Cases
Chicken pox	53
Conjunctivitis (infectious)	3
Diphtheria	35
German measles	77
Influenza	6
Measles	307
Mumps	11
Paratyphoid fever	1
Pneumonia (all forms)	55
Scarlet fever	110
Septic sore throat	2
Smallpox	2
Tuberculosis (all forms)	37
Typhoid fever	3
Whooping cough	103

DELAWARE	Cases
Chicken pox	1
Diphtheria	2
Influenza	1
Measles	6
Mumps	5
Pneumonia	1
Scarlet fever	4
Smallpox	3
Tuberculosis	5
Whooping cough	1

FLORIDA	Cases
Chicken pox	22
Diphtheria	9
Lethargic encephalitis	1
Malaria	16
Measles	5
Mumps	134
Paratyphoid fever	1
Scarlet fever	5
Smallpox	3
Tetanus	4
Tuberculosis	95
Typhoid fever	9
Whooping cough	41

ILLINOIS

	Cases
Cerebrospinal meningitis:	
Cook County	2
St. Clair County	1
Diphtheria:	
Cook County	48
Scattering	35
Influenza	67
Measles	1,372
Pneumonia	263
Poliomyelitis—Massac County	1
Scarlet fever:	
Cook County	278
Du Page County	9
Kane County	15
Lake County	9
Madison County	8
Peoria County	11
St. Clair County	28
Sangamon County	8
Stephenson County	25
Scattering	79
Smallpox:	
Will County	8
Scattering	20
Tuberculosis	210
Typhoid fever	15
Whooping cough	287

IOWA

Diphtheria	15
Scarlet fever	20
Smallpox	11
Typhoid fever	1

KANSAS

Chicken pox	57
Diphtheria	8
Influenza	7
Lethargic encephalitis	1
Measles	9
Mumps	134
Pneumonia	20
Scarlet fever	84
Smallpox	17
Tuberculosis	95
Typhoid fever	2
Whooping cough	39

LOUISIANA

Diphtheria	11
Influenza	32
Lethargic encephalitis	1
Malaria	20
Pellagra	17
Pneumonia	52
Scarlet fever	14
Smallpox	11
Tuberculosis	27
Typhoid fever	45
Whooping cough	14

MAINE

Chicken pox	42
Diphtheria	2
Dysentery	2
German measles	7
Influenza	38

[1]Week ended Friday.

MAINE—continued

	Cases
Measles	4
Mumps	99
Paratyphoid fever	3
Pneumonia	22
Poliomyelitis	1
Scarlet fever	19
Tuberculosis	13
Typhoid fever	1
Vincent's angina	3
Whooping cough	12

MARYLAND [1]

Chicken pox	68
Diphtheria	31
Dysentery	1
German measles	5
Influenza	36
Measles	33
Mumps	86
Pneumonia (all forms)	48
Scarlet fever	63
Septic sore throat	2
Smallpox	2
Tuberculosis	85
Typhoid fever	3
Whooping cough	113

MASSACHUSETTS

Cerebrospinal meningitis	2
Chicken pox	148
Conjunctivitis (suppurative)	11
Diphtheria	79
German measles	276
Influenza	17
Lethargic encephalitis	4
Measles	818
Mumps	77
Ophthalmia neonatorum	22
Pneumonia (lobar)	124
Scarlet fever	245
Septic sore throat	4
Trachoma	1
Tuberculosis (all forms)	165
Typhoid fever	10
Whooping cough	150

MICHIGAN

Diphtheria	53
Measles	492
Pneumonia	116
Scarlet fever	315
Smallpox	12
Tuberculosis	54
Typhoid fever	8
Whooping cough	213

MONTANA

Chicken pox	6
Diphtheria	5
German measles	10
Measles	23
Mumps	22
Rocky Mountain spotted fever:	
Shepherd	1
Teigen	1
Scarlet fever	32
Septic sore throat	1

MONTANA—continued

	Cases
Smallpox	2
Tuberculosis	5
Tularaemia—Miles City	1
Typhoid fever	2
Whooping cough	7

NEW JERSEY

Anthrax	1
Cerebrospinal meningitis	1
Chicken pox	141
Diphtheria	72
Influenza	20
Measles	498
Pneumonia	136
Scarlet fever	263
Smallpox	10
Typhoid fever	5
Whooping cough	220

NORTH CAROLINA

Cerebrospinal meningitis	1
Chicken pox	75
Diphtheria	33
German measles	15
Measles	29
Scarlet fever	32
Septic sore throat	2
Smallpox	52
Typhoid fever	4
Whooping cough	110

OREGON

Cerebrospinal meningitis	3
Chicken pox	26
Diphtheria:	
Portland	18
Scattering	6
Influenza	31
Measles	3
Mumps	35
Pneumonia	[1] 8
Scarlet fever:	
Clackamas County	10
Scattering	9
Smallpox:	
Portland	10
Scattering	12
Tuberculosis	13
Typhoid fever	4
Whooping cough	34

SOUTH DAKOTA

Chicken pox	1
Diphtheria	1
Measles	1
Mumps	2
Pneumonia	1
Rocky Mountain spotted fever	1
Scarlet fever	21
Trachoma	1
Tuberculosis	1
Whooping cough	3

TEXAS

Chicken pox	16
Diphtheria	24
Dysentery (epidemic)	15
Influenza	11
Measles	23
Mumps	56

[1] Deaths.

TEXAS—continued

	Cases
Pellagra	4
Pneumonia	3
Scarlet fever	10
Smallpox	83
Trachoma	1
Tuberculosis	14
Typhoid fever	11
Whooping cough	9

VERMONT

Chicken pox	11
Diphtheria	1
Measles	8
Mumps	39
Scarlet fever	5
Whooping cough	13

VIRGINIA

Smallpox:	
Accomac County	1
Charlotte County	1

WASHINGTON

Cerebrospinal meningitis:	
Spokane	1
Tacoma	1
Chicken pox	76
Diphtheria	13
German measles	45
Measles	4
Mumps	113
Scarlet fever	22
Smallpox	65
Tuberculosis	15
Whooping cough	145

WEST VIRGINIA

Diphtheria	4
Scarlet fever	27
Smallpox	2
Typhoid fever	2

WISCONSIN

Milwaukee:	
Cerebrospinal meningitis	1
Chicken pox	32
Diphtheria	16
German measles	89
Measles	209
Mumps	59
Pneumonia	20
Scarlet fever	17
Smallpox	57
Tuberculosis	22
Typhoid fever	1
Whooping cough	30
Scattering:	
Chicken pox	93
Diphtheria	36
German measles	248
Influenza	190
Measles	193
Mumps	84
Pneumonia	24
Scarlet fever	121
Smallpox	21
Tuberculosis	13
Typhoid fever	2
Whooping cough	95

Reports for Week Ended May 9, 1925

DISTRICT OF COLUMBIA	Cases
Chicken pox	15
Diphtheria	26
Influenza	2
Measles	39
Pneumonia	24
Scarlet fever	21
Smallpox	1
Tuberculosis	24
Typhoid fever	2
Whooping cough	9

NEBRASKA	Cases
Chicken pox	13
Diphtheria	4
Measles	2
Mumps	17
Scarlet fever	17
Smallpox	17
Whooping cough	19

NORTH DAKOTA	Cases
Chicken pox	5
Diphtheria	4
German measles	9
Influenza	5
Measles	2
Mumps	2

NORTH DAKOTA—continued	Cases
Pneumonia	7
Scarlet fever	30
Trachoma	1
Tuberculosis	3
Typhoid fever	1
Whooping cough	5

VERMONT	Cases
Chicken pox	29
Diphtheria	5
Measles	6
Mumps	63
Pneumonia	3
Scarlet fever	10
Whooping cough	4

WYOMING	Cases
Chicken pox	3
Diphtheria	3
Influenza	2
Measles	9
Mumps	12
Pneumonia	1
Rocky Mountain spotted fever	1
Scarlet fever	4
Tuberculosis	1
Whooping cough	36

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
March, 1925										
Colorado		64	58		8			173	1	7
Utah	4	46	722		12			51	2	
April, 1925										
Alabama	12	34	984	121	90	92	2	104	497	48
Arkansas	1	13	644	224	104	62	0	19	38	27
Delaware		8	4	3	37			17	1	1
Florida	2	33	65	62	24	12	2	25	32	76
Indiana	2	119	850				1	856		25
Massachusetts	16	394	182	2	3,846	1	2	1,148	1	42
New York	15	1,576	798	5	3,258		11	2,898	14	142
North Carolina	1	90			97		2	107	350	10

Number of Cases of Certain Communicable Diseases Reported for the Month of March, 1925, by State Health Officers

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	186	54	138	210	114	672	279	56	48
Arizona	49	14	291	28	43	4	91	2	17
Arkansas	115	19	146	155	30	31	56	46	104
California	1,676	560	387	1,203	689	653	700	38	1,359
Colorado	242	64	8	543	173	1	134	7	57
Connecticut	245	206	632	273	637		143	12	292
Delaware	1	10	7	13	28		[1] 16		7
District of Columbia	97	50	124		182	7	107	6	64
Florida	49	30	30	289	16	22	123	39	58
Georgia	192	64	113	292	25	48	85	21	258
Idaho		5			27			6	
Illinois	1,168	439	4,615	1,537	2,384	220	1,143	62	1,121
Indiana		118			951			21	
Iowa	106	41	16	60	132	40	3	(2)	9
Kansas	467	114	47	2,018	596	44	230	10	160
Kentucky [3]									
Louisiana	82	78	5	10	88	141	[1] 155	47	42
Maine	163	24	50	670	162		46	11	15
Maryland	359	137	159	374	336	2	262	27	477
Massachusetts	821	429	2,747	420	1,458		784	42	700
Michigan	688	340	782	436	1,717	80	406	37	364
Minnesota	578	313	176		1,104	117	315	26	78
Mississippi	982	71	788	2,388	21	155	363	91	888
Missouri	273	305	59	453	1,226	75	229	23	112
Montana	48	45	139	104	125	36	59	3	28
Nebraska		30			73			3	
New Hampshire [4]									
New Jersey	620	393	1,057		1,308	41	468	46	1,310
New Mexico	93	40	229	99	44	8	132	3	29
New York	2,030	1,402	2,640	1,546	3,155	34	1,942	95	1,547
North Carolina	565	130	276		100	250		12	403
North Dakota	52	17	9	50	273	36	11	3	44
Ohio	1,290	406	959	864	2,338	576	682	46	689
Oklahoma	143		85	201		176	[1] 145	43	179
Oregon	99	115	20	148	100	96	74	9	59
Pennsylvania	1,936	998	5,524	3,276	3,087	30	526	88	1,197
Rhode Island		39			118	1		2	
South Carolina	37	254	1	62	6	54	[1] 9	1	44
South Dakota	33	32	10	11	213	47	7	9	12
Tennessee [5]									
Texas [5]									
Utah	263	46	12	296	51	2	[1] 12		310
Vermont	207	8	51	392	100		[1] 10	5	100
Virginia	609	113	644		191	22	[1] 224	40	1,004
Washington	475	199	39	656	175	198	182	25	320
West Virginia	154	62	177		190	104	49	40	176
Wisconsin	783	170	2,601	1,550	600	197	106	6	383
Wyoming	56	1	30	33	29	6	[1] 1	32	10

[1] Pulmonary.
[2] Reports not required by law.
[3] Reports received weekly
[4] Reports received annually.
[5] Reports not received at time of going to press.

Case Rates per 1,000 Population (Annual Basis) for the Month of March, 1925

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	0.89	0.26	0.66	1.00	0.54	3.21	1.33	0.27	0.23
Arizona	1.42	.40	8.40	.81	1.24	.12	2.63	.06	.49
Arkansas	.73	.12	.93	.98	.19	.20	.36	.29	.66
California	4 91	1.64	1.13	3.52	2.02	1.91	2.05	.11	3.98
Colorado	2.80	.74	.09	6.27	2.00	.01	1.55	.08	.66
Connecticut	1.88	1.58	4.86	2.10	4.90	------	1.10	.09	2.25
Delaware	.05	.50	.35	.65	1.15	------	[1] .80	------	.35
District of Columbia	2.29	1.18	2.93	------	3.12	.17	2.53	.14	1.51
Florida	.53	.42	.32	3.12	.17	.24	1.33	.42	.63
Georgia	.74	.25	.44	1.12	.10	.18	.33	.08	.99
Idaho	------	.12	------	------	.65	------	------	.14	------
Illinois	1.97	.74	7.80	2.60	4.03	.37	1.93	.10	1.89
Indiana	------	.45	------	------	3.66	------	------	.08	------
Iowa	.50	.19	.08	.28	.62	.10	.01	[2]	.04
Kansas	3.03	.74	.31	13.10	3.87	.29	1.49	.06	1.04
Kentucky [3]	------	------	------	------	------	------	------	------	------
Louisiana	.51	.49	.03	.06	.52	.88	[1] .97	.29	.26
Maine	2.45	.36	.75	10.08	2.44	------	.69	.17	.23
Maryland	2.75	1.05	1.22	2.86	2 57	.02	2.01	.21	3.65
Massachusetts	2.34	1.22	7.84	1 20	4.16	------	2.24	.12	2.00
Michigan	1.95	.96	2.22	1.24	4.87	.23	1.15	.10	1.03
Minnesota	2.65	1.44	.81	------	5.07	.54	1.45	.12	.34
Mississippi	6.46	.47	5.18	15.70	.14	1.02	2.39	.60	5.84
Missouri	.93	1.04	.20	1.54	4.16	.25	.78	.08	.38
Montana	.87	.82	2.53	1.89	2.28	.66	1.07	.05	.51
Nebraska	------	.26	------	------	.63	------	------	.03	------
New Hampshire [4]	------	------	------	------	------	------	------	------	------
New Jersey	2 08	1.32	3.55	------	4.38	.14	1.57	.15	4.40
New Mexico	2.89	1.24	7.11	3 07	1 37	.25	4.10	.09	.90
New York	2.15	1.49	2.80	1 64	3.34	.04	2.06	.10	1.64
North Carolina	2.41	.55	1.18	------	.43	1.07	------	.05	2.10
North Dakota	.89	.29	.15	.86	4.68	.62	.19	.05	.75
Ohio	2 40	.76	1.79	1.61	4.36	1.07	1.27	.09	1.28
Oklahoma	.75	------	.45	1.06	------	.93	[1] .76	.23	.94
Oregon	1.38	1.60	.28	2.06	1.39	1.34	1.03	.13	.82
Pennsylvania	2.45	1.26	6.98	4.14	3.90	.04	.66	.11	1.51
Rhode Island	------	.72	------	------	2.17	.02	------	.04	------
South Carolina	.24	1.68	.01	.41	.04	.36	[1] .06	.01	.29
South Dakota	.58	.57	.18	.19	3.76	.83	.12	.16	.21
Tennessee [5]	------	------	------	------	------	------	------	------	------
Texas [3]	------	------	------	------	------	------	------	------	------
Utah	8 68	1.10	.29	7.08	1.22	.05	[1] .29	------	7.41
Vermont	6.92	.27	1.70	13.10	3.34	------	[1] .33	.17	3.34
Virginia	2.93	.54	3.10	------	.92	.11	[1] 1 08	.19	4.83
Washington	3.78	1.59	.31	5.23	1.39	1.58	1.45	.20	2.55
West Virginia	1.13	.46	1.30	------	1.46	.76	.36	.29	1.29
Wisconsin	3.29	.71	10.93	6.52	2.52	.83	.45	.03	1.61
Wyoming	2.97	.05	1.59	1.75	1.54	.32	[1] .05	1.70	.53

[1] Pulmonary.
[2] Reports not required by law.
[3] Reports received weekly.
[4] Reports received annually
[5] Reports not received at time of going to press.

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named for the week ended May 2, 1925:

Los Angeles, Calif.

Week ended May 2, 1925:

Number of rats examined	4,529
Number of rats found to be plague infected	2
Number of squirrels examined	1,297
Number of squirrels found to be plague infected	0

Totals, Nov. 5, 1924, to May 2, 1925:

Number of rats examined	95,403
Number of rats found to be plague infected	182
Number of squirrels examined	11,219
Number of squirrels found to be plague infected	9

Date of discovery of last plague-infected rodent, May 12, 1925.
Date of last human case, Jan. 15, 1925.

Oakland, Calif.

(Including other East Bay communities)

Week ended May 2, 1925:	
Number of rats trapped	1,862
Number of rats found to be plague infected	0
Totals, Jan. 1 to May 2, 1925:	
Number of rats trapped	42,155
Number of rats found to be plague infected	21

Date of discovery of last plague-infected rat, Mar. 4, 1925.
Date of last human case, Sept. 10, 1919.

New Orleans, La.

Week ended May 2, 1925:	
Number of vessels inspected	337
Number of inspections made	1,057
Number of vessels fumigated with cyanide gas	31
Number of rodents examined for plague	5,401
Number of rodents found to be plague infected	0
Totals, Dec. 5, 1924, to May 2, 1925:	
Number of rodents examined for plague	91,020
Number of rodents found to be plague infected	12

Date of discovery of last plague-infected rat, Jan. 17, 1925.
Date of last human case occurring in New Orleans, Aug. 20, 1920.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended May 2, 1925, 35 States reported 1,283 cases of diphtheria. For the week ended May 3, 1924, the same States reported 1,555 cases of this disease. One hundred and two cities, situated in all parts of the country and having an aggregate population of nearly 28,700,000, reported 863 cases of diphtheria for the week ended May 2, 1925. Last year, for the corresponding week they reported 902 cases. The estimated expectancy for these cities was 924 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty-two States reported 5,246 cases of measles for the week ended May 2, 1925, and 13,322 cases of this disease for the week ended May 3, 1924. One hundred and two cities reported 3,207 cases of measles for the week this year, and 4,680 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 35 States—this year, 3,168 cases; last year, 3,278; 102 cities—this year, 1,701; last year, 1,551; estimated expectancy, 1,018 cases.

Smallpox.—For the week ended May 2, 1925, 35 States reported 846 cases of smallpox. Last year, for the corresponding week, they reported 1,410 cases. One hundred and two cities reported smallpox for the week as follows: 1925, 278 cases; 1924, 542 cases; estimated expectancy, 104 cases. These cities reported 20 deaths from smallpox for the week this year.

Typhoid fever.—Two hundred and fifty-nine cases of typhoid fever were reported for the week ended May 2, 1925, by 34 States. For the corresponding week of 1924 the same States reported 229 cases. One hundred and two cities reported 98 cases of typhoid fever for the week this year, and 48 cases for the corresponding week last year. The estimated expectancy for these cities was 63 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 102 cities as follows: 1925, 1,010 deaths; 1924, 984 deaths.

City reports for week ended May 2, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	7	1	1	1	0	2	19	2
New Hampshire:									
Concord	22,408	0	0	0	0	0	1	0	1
Manchester	81,383	0	2	0	0	0	6	0	1
Vermont:									
Barre	[1] 10,008	2	0	1	0	0	0	2	1
Burlington	23,613	0	1	3	0	0	11	11	0
Massachusetts:									
Boston	770,400		56	24	5	2	302		24
Fall River	120,912	2	3	4	4	2	2	0	1
Springfield	144,227	3	3	0	2	2	29	3	4
Worcester	191,927	11	4	3	0	0	19	0	8
Rhode Island:									
Pawtucket	68,799		1	0	0	0	0		1
Providence	242,378	0	11	5		1	1	0	4
Connecticut:									
Bridgeport	[1] 143,555	1	5	5	1	1	1	0	4
Hartford	[1] 138,036		6						
New Haven	172,967	5	4	0	0	0	45	1	6
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	8	11	1	1	1	199	3	21
New York	5,927,625	162	250	271	47	19	139	71	243
Rochester	317,867	3	4	20		1	45	23	6
Syracuse	184,511	12	7	3		1	15	11	4
New Jersey:									
Camden	124,157	1	3	5	0	0	90	0	8
Newark	438,699	34	17	6	4	0	60	13	21
Trenton	127,390	2	4	3	0	0	3	0	1
Pennsylvania:									
Philadelphia	1,922,788	62	67	101		5	328	15	57
Pittsburgh	613,442	35	17	6		1	386	9	51
Reading	110,917	8	3	4	0	0	185	3	1
Scranton	140,636	2	3	0	0	0	0	0	21

[1] Population Jan. 1, 1920.

City reports for week ended May 2, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	7	8	6		7	4	5	19
Cleveland	888,519	95	21	25	4	3	12	15	22
Columbus	261,082	5	4	1		2	1	0	2
Toledo	268,338	20	3	5		3	111	1	6
Indiana:									
Fort Wayne	93,573	10	2	2		4	9	0	0
Indianapolis	342,718	10	5	0		4	8	3	14
South Bend	76,709	1	1	0	0	0	6	0	0
Terre Haute	68,939	3	1	0	0	0	13	0	1
Illinois:									
Chicago	2,886,121	55	100	64	27	5	680	14	78
Cicero	55,968		2						
Springfield	61,833	9	1	0	5	1	20	50	1
Michigan:									
Detroit	995,668	44	50	29	4	3	13	15	33
Flint	117,968	0	3	5	0	0	14	1	4
Grand Rapids	145,947	4	4	0		1	49	0	4
Wisconsin:									
Madison	42,519	4	0	0	0		3	20	
Milwaukee	484,595	34	12	9	0	0	176	77	19
Racine	64,393	17	1	6	0	0	6	8	1
Superior	[1] 39,671	0	1	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	1	2	0		1	0	0	3
Minneapolis	409,125	31	15	19	0	0	8	5	6
St. Paul	241,891	35	13	19		5	7	23	6
Iowa:									
Davenport	61,262	0	1	0	0		0	0	
Des Moines	140,923	0	3	0	0		0	0	
Sioux City	79,662	4	1	0	0		1	17	
Waterloo	39,667	19	0	0	0		0	1	
Missouri:									
Kansas City	351,819	4	7	2	4	4	2	23	8
St. Joseph	78,232	1	2	0	1	1	1	3	[illegible]
St. Louis	803,853	32	38	49	1	2	14	8	
North Dakota:									
Fargo	24,841	3	0	0		1	1	8	
Grand Forks	14,517	1	0	2	0		0	0	
South Dakota:									
Aberdeen	15,829	1		0	0		0	0	
Sioux Falls	29,206	2	1	0	0	0	0	0	0
Nebraska:									
Lincoln	58,761	13	2	2	0	0	0	1	2
Omaha	204,382	5	4	4	0	0	1	0	5
Kansas:									
Topeka	52,555	0	1	0	0	0	3	87	1
Wichita	79,261	6	1	2	0	0	0	1	2
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	5	1	5	0	0	5	1	4
Maryland:									
Baltimore	773,580	80	20	28	27	5	11	65	36
Cumberland	32,361	0	1	0	2	0	0	0	0
Frederick	11,301	1	0	0	0	0	1	0	1
District of Columbia:									
Washington	[1] 437,571	21	10	11	1	2	55		17
Virginia:									
Lynchburg	30,277	2	0	0	0	0	0	17	2
Norfolk	159,089	17	1	0	0	0	4	74	2
Richmond	181,044	22	2	0		1	21	5	4
Roanoke	55,502	8	1	2	0	0	8	0	0
West Virginia:									
Charleston	45,597	2	0	1		1	37	7	3
Wheeling	[1] 56,208	7	1	0		1	5	0	4
North Carolina:									
Raleigh	29,171	8	0	0	0	0	0	0	0
Wilmington	35,719	2	0	0	0	0	0	8	1
Winston-Salem	56,230	0	1	0	0	0	3	4	3

[1] Population Jan. 1, 1920.

City reports for week ended May 2, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
SOUTH ATLANTIC—con.									
South Carolina:									
Charleston	71,245	3	1	0	0	0	0	0	3
Columbia	39,688	1	0	1	0	0	0	0	0
Greenville	25,789	0	1	0	0	0	0	0	0
Georgia:									
Atlanta	222,963	9	1	1	2	1	0	2	10
Brunswick	15,937	0	0	0	0	0	0	1	1
Savannah	89,448	4	0	1	4	2	0	0	1
Florida:									
St. Petersburg	24,403	0	0	0	0	0	0	0	2
Tampa	56,050	1	1	1	0	0	0	0	2
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	1	0	0	1	0	0	2
Louisville	257,671	0	4	0	3	0	4	0	4
Tennessee:									
Memphis	170,067	3	3	2		2	5	8	6
Nashville	121,128	5	1	2		2	21	1	4
Alabama:									
Birmingham	195,901	8	1	1	37	2	5	5	16
Mobile	63,858	0	1	2		2	0	0	2
Montgomery	45,383	0	0	0	0	0	0	6	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	0	0	0	0		1	1	
Little Rock	70,916	0	0	0	1	0	3	1	2
Louisiana:									
New Orleans	404,575	4	7	7	2	2	0	0	6
Shreveport	54,590	5		3	0	1	0	0	3
Oklahoma:									
Oklahoma	101,150	4	1	1		2	1	0	2
Texas:									
Dallas	177,274	23	3	1		1	1	1	7
Galveston	46,877	1	0	0	0	0	0	1	1
Houston	154,970	0	3	3	0	0	0	0	2
San Antonio	184,727	1	1	1		2	1	0	4
MOUNTAIN									
Montana:									
Billings	16,927		0						
Great Falls	27,787	0	0	1	0	0	1	3	0
Helena	[1] 12,037		0	0	0	0	0		0
Missoula	[1] 12,668	0	0	3	0	0	54	0	1
Idaho:									
Boise	22,806	2	1	0	0	0	0	0	0
Colorado:									
Denver	272,031	11	10	4		5	1	61	11
Pueblo	43,519	2	2	0	0	0	0	9	0
New Mexico:									
Albuquerque	16,648	1	2	0	0	0	1	7	1
Utah:									
Salt Lake City	126,241	17	3	4	0	0	0	22	1
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	30	4	9	0		1	48	
Spokane	104,573	0	2	14	0		0	0	
Tacoma	101,731	4	1	2	0	0	0	0	2
Oregon:									
Portland	273,621	7	4	19	11	1	2	15	11
California:									
Los Angeles	666,853	52	32	22	9	0	45	24	16
Sacramento	69,950	5	1	1		2	0	0	5
San Francisco	539,038	20	23	23	10	1	10	63	8

[1] Population Jan. 1, 1920.

City reports for week ended May 2, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	2	6	0	0	0	1	0	1	0	4	20
New Hampshire:											
Concord	0	0	0	0	0	0	0	0	0	0	12
Manchester	2	6	0	0	0	0	0	0	0	0	6
Vermont:											
Barre	1	2	0	0	0	2	0	0	0	0	4
Burlington	1	0	0	0	0	0	0	0	0	0	1
Massachusetts:											
Boston	53	63	0	0	0	18	2	1	1		235
Fall River	4	10	0	0	0	5	1	0	1	6	36
Springfield	6	22	0	0	0	1	0	0	0	17	38
Worcester	7	14	0	0	0	2	0	0	0	6	62
Rhode Island:											
Pawtucket	1	1	0	0	0	1	0	0	0		16
Providence	10	10	0	0	0	5	0	1	0		60
Connecticut:											
Bridgeport	5	25	0	0	0	4	0	0	0	0	29
Hartford	4		0				0				
New Haven	7	14	0	0	0	2	1	1	0	43	39
MIDDLE ATLANTIC											
New York:											
Buffalo	18	18	0	0	0	10	0	3	0	21	151
New York	216	318	1	0	0	[1] 105	12	33	2	133	1,578
Rochester	14	40	0	0	0	2	0	0	0	2	76
Syracuse	13	2	0	0	0	3	0	0	0	4	51
New Jersey:											
Camden	2	18	0	3	2	2	1	0	0	3	32
Newark	22	27	0	0	0	4	1	2	0	32	94
Trenton	4	2	0	0	0	2	0	0	0	3	32
Pennsylvania:											
Philadelphia	72	130	1	11	4	55	4	5	1	46	521
Pittsburgh	21	66	0	1	0	14	1	0	2	4	221
Reading	3	17	0	0	0	1	0	0	0	5	22
Scranton	2	1	0	0	0	2	0	0	0	2	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	12	14	2	0	0	11	1	0	0	1	126
Cleveland	22	29	1	0	0	13	2	0	1	38	205
Columbus	6	6	1	6	0	5	0	0	0	7	59
Toledo	16	16	3	0	0	6	1	0	0	15	66
Indiana:											
Fort Wayne	2	7	2	0	0	1	0	0	0	3	
Indianapolis	16	5	4	1	0	11	0	0	0	13	109
South Bend	3	7	0	1	0	2	1	0	0	1	17
Terre Haute	2	4	1	1	0	2	0	0	0	0	26
Illinois:											
Chicago	72	181	2	0	2	46	2	4	0	101	725
Cicero	1		0				0				
Springfield	2	3	0	0	0	0	0	0	0	3	15
Michigan:											
Detroit	78	89	7	0	0	34	3	1	0	132	281
Flint	6	8	1	0	0	0	1	0	0	11	13
Grand Rapids	7	45	1	1	0	0	0	0	0	5	27
Wisconsin:											
Madison	3	0	1	0			1	1		10	
Milwaukee	31	19	1	30	2	5	1	0	0	19	120
Racine	5	3	0	1	0	0	0	0	0	0	10
Superior	2	14	1	0	0	0	1	0	0	0	10
WEST NORTH CENTRAL											
Minnesota:											
Duluth	4	11	1	0	0	2	1	0	0	0	26
Minneapolis	27	78	7	2	3	3	1	2	0	5	91
St. Paul	19	36	6	3	1	6	0	1	0	12	74

[1] Pulmonary tuberculosis only.

City reports for week ended May 9, 1925—**Continued**

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL—continued											
Iowa:											
Davenport	2	1	4	0			0	0		1	
Des Moines	11	3	3	2			0	0		0	
Sioux City	3	1	1	0			0	0		0	
Waterloo	2	0	0	4			0	0		9	
Missouri:											
Kansas City	11	35	3	3	0	7	1	1	0	11	85
St. Joseph	2	0	0	0	0	0	0	0	0	1	32
St. Louis	33	79	2	11	0	10	1	2	0	5	220
North Dakota											
Fargo	1	5	0	0	0	0	0	0	0	4	8
Grand Forks	1	0	0	0			0	0		0	
South Dakota:											
Aberdeen		0		0				0		4	
Sioux Falls	1	1	1	0	0	0	0	0	0	0	13
Nebraska:											
Lincoln	3	3	1	3	0	1	0	0	0	6	14
Omaha	4	0	2	13	0	6	0	0	0	2	52
Kansas:											
Topeka	2	4	2	0	0	0	0	0	0	0	9
Wichita	2	0	3	0	0	0	0	0	0	17	18
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	3	0	0	0	6	0	0	0	1	27
Maryland											
Baltimore	27	32	1	1	0	29	2	2	0	96	237
Cumberland	1	0	0	0	0	0	0	0	0	0	7
Frederick	2	0	0	0	0	0	1	0	0	0	5
District of Columbia.											
Washington	20	21	1	2	3	11	1	8	0	23	141
Virginia:											
Lynchburg	0	0	1	0	0	1	0	0	0	5	14
Norfolk	1	0	0	1	0	2	1	0	0	39	
Richmond	2	0	0	0	0	1	1	2	0	4	53
Roanoke	1	2	1	1	0	2	0	1	0	1	17
West Virginia.											
Charleston	1	0	1	4	0	1	0	0	0	5	18
Wheeling	2	4	0	0	0	1	0	1	0	1	12
North Carolina:											
Raleigh	0	0	1	0	0	2	0	0	0	0	12
Wilmington	0	0	1	5	0	0	0	0	0	0	8
Winston-Salem	1	0	3	8	0	2	0	0	0	10	15
South Carolina:											
Charleston	0	0	0	0	0	2	0	1	0	4	22
Columbia	0	0	1	0	0	1	0	0	0	2	
Greenville	1	0	0	8	0	0	0	2	0	1	2
Georgia:											
Atlanta	3	1	4	1	0	5	1	1	0	5	68
Brunswick	0	0	0	0	0	0	0	0	0	0	4
Savannah	1	1	0	0	0	4	0	0	0	4	26
Florida:											
St. Petersburg	2	0	0	0	0	0	1	0	0	0	8
Tampa	0	1	0	0	0	2	1	1	0	0	25
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	2	0	0	0	0	0	0	0	3	19
Louisville	4	9	1	4	0	9	1	1	0	6	67
Tennessee:											
Memphis	4	6	2	6	0	12	1	1	0	16	63
Nashville	1	6	1	5	0	3	1	0	0	1	46
Alabama:											
Birmingham	1	22	0	61	1	11	1	3	0	4	78
Mobile	0	1	1	0	0	1	0	1	0	0	16
Montgomery	1	0	1	0	0	0	0	2	2	0	15

City reports for week ended May 2, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	0	1	0			0	0		0	
Little Rock	0	1	0	0	0	0	1	0	0	5	
Louisiana:											
New Orleans	3	16	3	0	0	13	2	9	1	13	137
Shreveport		0		1	0	1		0	0	0	26
Oklahoma:											
Oklahoma	2	1	5	0	0	1	0	1	1	0	15
Texas:											
Dallas	2	1	3	1	0	3	0	1	0	5	50
Galveston	0	1	0	0	0	3	0	0	0	0	13
Houston	1	4	1	5	0	3	1	1	0	0	52
San Antonio	1	1	0	0	0	6	1	0	0	0	
MOUNTAIN											
Montana:											
Billings	1		0				0				
Great Falls	0	17	2	1	0	1	0	0	0	0	6
Helena	0	4	0	0	0	1	0	0	0		5
Missoula	1	4	1	0	0	0	0	0	0	0	3
Idaho:											
Boise	1	0	0	0	0	0	0	0	0	1	8
Colorado:											
Denver	11	8	2	0	0	7	0	0	0	3	86
Pueblo	1	0	0	0	0	0	1	0	0	2	6
New Mexico:											
Albuquerque	0	0	0	0	0	2	0	0	0	0	8
Utah:											
Salt Lake City	3	1	1	0	0	2	0	0	0	3	29
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	1	3
PACIFIC											
Washington:											
Seattle	7	4	3	18			1	0		109	
Spokane	4	0	7	1			0	0		9	
Tacoma	2	4	1	7	0	2	0	2	0	4	29
Oregon:											
Portland	7	3	4	3	0	4	1	1	0	16	
California:											
Los Angeles	14	25	1	42	1	21	2	3	0	59	218
Sacramento	2	0	0	1	0	3	0	0	1	11	27
San Francisco	16	10	2	2	1	16	1	1	0	70	169

Division, State, and city	Cerebrospinal meningitis: Cases	Cerebrospinal meningitis: Deaths	Lethargic encephalitis: Cases	Lethargic encephalitis: Deaths	Pellagra: Cases	Pellagra: Deaths	Poliomyelitis (infantile paralysis): Cases, estimated expectancy	Poliomyelitis: Cases	Poliomyelitis: Deaths
NEW ENGLAND									
Massachusetts:									
Boston	1	1	0	0	0	0	0	1	0
Fall River	0	0	1	1	0	0	0	0	0
Springfield	0	0	1	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	0	2	9	2	0	0	1	0	0
New Jersey:									
Camden	0	0	1	1	0	0	0	0	0
Pennsylvania:									
Philadelphia	0	0	0	1	0	0	0	0	0

City reports for week ended May 2, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cleveland	1	0	1	0	0	0	0	0	0
Indiana									
Terre Haute	1	0	0	0	0	0	0	0	0
Illinois:									
Chicago	1	1	1	1	0	0	0	2	1
Springfield	0	0	0	0	1	1	0	0	0
Michigan.									
Detroit	1	0	0	0	0	0	0	0	0
Wisconsin:									
Milwaukee	0	0	0	0	0	0	0	1	0
WEST NORTH CENTRAL									
Missouri.									
St Louis	2	0	0	0	0	0	0	0	0
Nebraska									
Omaha	0	0	0	1	0	0	0	0	0
SOUTH ATLANTIC									
Maryland									
Baltimore	0	0	1	0	0	0	0	1	0
North Carolina									
Winston Salem	0	0	0	0	2	0	0	0	0
South Carolina									
Columbia	0	0	0	0	0	1	0	0	0
EAST SOUTH CENTRAL									
Alabama:									
Birmingham	0	0	0	0	2	0	0	0	0
Mobile	0	0	0	0	0	1	0	0	0
WEST NORTH CENTRAL									
Arkansas:									
Little Rock	0	0	0	0	0	1	0	0	0
Louisiana:									
Shreveport	0	0	0	0	0	1	-------	0	0
Texas									
Dallas	0	0	0	0	1	0	0	0	0
Houston	0	0	0	1	1	0	0	0	0
PACIFIC									
Washington:									
Spokane	1	-------	0	-------	0	-------	0	0	-------
Oregon:									
Portland	2	3	0	0	0	0	0	0	0
California:									
Los Angeles	0	0	1	0	1	0	0	1	0
San Francisco	0	0	1	0	0	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended May 2, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000 and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities in-

cluded in each group and the aggregate populations are shown in a separate table below:

Summary of weekly reports from cities, February 22 to May 2, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Feb. 28	Mar. 7	Mar 14	Mar 21	Mar 28	Apr. 4	Apr 11	Apr 18	Apr. 25	May 2
105 cities	[2] 169	162	167	167	[3] 168	177	[4] 158	[4] 161	[5] 162	[6] 157
New England	[2] 189	233	176	147	119	171	166	129	144	[2] 114
Middle Atlantic	178	167	214	196	231	241	220	228	218	213
East North Central	119	114	128	134	112	93	[4] 97	[4] 111	[4] 114	[4] 110
West North Central	299	282	201	199	217	220	226	168	[7] 191	201
South Atlantic	114	104	91	136	95	81	73	102	108	104
East South Central	51	63	40	69	57	23	34	46	40	40
West South Central	162	144	158	97	121	83	107	74	79	70
Mountain	153	86	105	143	134	124	105	239	[8] 285	[9] 118
Pacific	258	235	197	249	[3] 179	374	171	168	165	206

MEASLES CASE RATES

	Feb. 28	Mar. 7	Mar 14	Mar 21	Mar 28	Apr. 4	Apr 11	Apr 18	Apr. 25	May 2
105 cities	[2] 358	418	449	506	[3] 507	558	[4] 530	[4] 585	[5] 645	[6] 583
New England	[2] 585	656	542	725	755	957	1,011	917	1,217	[2] 1,069
Middle Atlantic	343	423	518	598	633	734	680	815	782	734
East North Central	632	789	740	775	798	726	[4] 706	[4] 731	[4] 894	[4] 758
West North Central	73	68	75	93	89	77	58	91	[7] 104	79
South Atlantic	81	100	146	189	136	209	207	256	295	305
East South Central	46	86	11	69	34	69	34	97	189	200
West South Central	51	23	88	42	9	88	51	65	37	28
Mountain	916	29	763	573	38	219	57	267	[8] 224	[9] 551
Pacific	61	107	110	189	[3] 151	209	241	154	203	102

SCARLET FEVER CASE RATES

	Feb. 28	Mar. 7	Mar 14	Mar 21	Mar 28	Apr. 4	Apr 11	Apr 18	Apr. 25	May 2
105 cities	[2] 408	395	432	427	[3] 419	409	[4] 366	[4] 342	[5] 359	[6] 309
New England	[2] 558	584	534	544	604	534	529	350	407	[2] 444
Middle Atlantic	412	372	439	417	405	436	359	343	336	323
East North Central	434	433	497	498	483	442	[4] 419	[4] 404	[4] 431	[4] 324
West North Central	734	775	719	792	755	736	647	651	[7] 691	518
South Atlantic	203	171	219	146	167	175	152	167	175	132
East South Central	183	194	355	286	286	263	280	229	257	263
West South Central	144	185	107	134	102	51	88	60	121	111
Mountain	315	286	200	429	248	277	258	315	[8] 428	[9] 335
Pacific	223	218	229	218	[3] 222	191	174	145	148	125

SMALLPOX CASE RATES

	Feb. 28	Mar. 7	Mar 14	Mar 21	Mar 28	Apr. 4	Apr 11	Apr 18	Apr. 25	May 2
105 cities	[2] 66	62	61	63	[3] 58	57	[4] 51	[4] 48	[5] 62	[6] 51
New England	[2] 0	0	0	0	0	12	2	0	2	[2] 0
Middle Atlantic	3	1	5	8	7	21	10	18	12	8
East North Central	28	42	39	32	33	24	[4] 22	[4] 27	[4] 40	[4] 31
West North Central	120	114	124	102	135	87	97	85	[7] 91	75
South Atlantic	43	51	59	57	67	49	43	53	79	63
East South Central	583	652	446	646	423	42	572	395	457	435
West South Central	116	74	74	107	107	46	51	14	42	32
Mountain	57	48	95	67	19	19	19	10	[8] 31	[9] 10
Pacific	313	206	247	212	[3] 191	255	148	162	264	206

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Hartford, Conn., not included. Report not received at time of going to press.
[3] Spokane, Wash., not included.
[4] Cicero, Ill., not included.
[5] Cicero, Ill., Fargo, N. Dak., Sioux Falls, S. Dak., Helena, Mont., and Boise, Idaho, not included.
[6] Hartford, Conn., Cicero, Ill., and Billings, Mont., not included.
[7] Fargo, N. Dak., and Sioux Falls, S. Dak., not included.
[8] Helena, Mont., and Boise, Idaho, not included.
[9] Billings, Mont., not included.

Summary of weekly reports from cities, February 22 to May 2, 1925—Annual rates per 100,000 population—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2
105 cities	[2] 14	11	10	12	[3] 11	9	[4] 10	[4] 12	[5] 16	[6] 18
New England	[2] 13	7	5	30	12	5	2	7	17	[2] 11
Middle Atlantic	8	10	5	8	7	4	9	11	14	22
East North Central	7	11	4	7	3	4	[4] 6	[4] 5	[4] 7	[4] 4
West North Central	17	6	10	8	6	2	2	2	[7] 6	12
South Atlantic	20	8	24	22	12	30	20	12	14	28
East South Central	34	34	34	46	57	17	17	34	80	46
West South Central	42	18	28	23	42	32	37	56	51	51
Mountain	76	10	19	0	0	0	19	38	[8] 31	[9] 0
Pacific	9	15	15	0	[3] 28	20	9	12	23	17

INFLUENZA DEATH RATES

	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2
105 cities	[2] 34	30	34	42	33	34	[4] 27	[4] 28	[5] 30	[6] 22
New England	[2] 40	17	35	30	30	35	32	27	30	[2] 21
Middle Atlantic	20	15	24	29	22	21	16	24	17	14
East North Central	24	27	33	49	40	38	[4] 27	[4] 25	[4] 33	[4] 22
West North Central	37	35	33	42	46	39	37	50	[7] 40	31
South Atlantic	49	53	33	53	12	28	26	12	43	26
East South Central	126	103	91	120	86	69	74	80	86	51
West South Central	148	143	107	76	36	36	46	36	25	31
Mountain	19	19	48	48	38	181	86	38	[8] 82	[9] 49
Pacific	29	29	16	12	53	29	12	29	12	12

PNEUMONIA DEATH RATES

	Feb. 28	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2
105 cities	[2] 201	205	222	217	206	204	[4] 202	[4] 195	[5] 204	[6] 167
New England	[2] 242	226	229	211	219	251	211	206	186	[2] 149
Middle Atlantic	185	210	214	217	199	215	190	204	223	206
East North Central	171	195	241	222	214	182	[4] 191	[4] 191	[4] 213	[4] 148
West North Central	166	140	175	173	166	193	228	171	[7] 139	72
South Atlantic	305	268	246	290	252	234	238	232	191	195
East South Central	292	269	366	286	269	269	343	206	286	194
West South Central	260	229	178	178	168	168	168	173	158	127
Mountain	267	162	210	172	200	162	267	210	[8] 234	[9] 128
Pacific	163	139	155	131	159	159	119	98	147	127

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

[2] Hartford, Conn., not included. Report not received at time of going to press.
[3] Spokane, Wash., not included.
[4] Cicero, Ill., not included.
[5] Cicero, Ill., Fargo, N. Dak., Sioux Falls, S. Dak., Helena, Mont., and Boise, Idaho, not included.
[6] Hartford, Conn., Cicero, Ill., and Billings, Mont., not included.
[7] Fargo, N. Dak., and Sioux Falls, S. Dak., not included.
[8] Helena, Mont., and Boise, Idaho, not included.
[9] Billings, Mont., not included.

FOREIGN AND INSULAR

ECUADOR

Mortality—Communicable diseases—Quito—March, 1925—During the month of March, 1925, 169 deaths from all causes were reported at Quito, Ecuador, including diphtheria, 1; dysentery, 3; measles, 5; typhoid fever, 1; tuberculosis, all forms, 9; whooping cough, 6. There were reported 17 deaths from acute bronchitis, 3 from pneumonia, 5 from other diseases of the respiratory organs, exclusive of phthisis pulmonalis, and 5 deaths from organic diseases of the heart. Population, 100,737.

EGYPT

Plague—April 9-15, 1925—Summary, January 1-April 15, 1925 (comparative)- During the week ended April 15, 1925, two cases of plague were reported in Egypt, occurring in two districts. From January 1 to April 15, 1925, there were reported 23 cases of plague as compared with 92 cases reported during the same period of the preceding year.

FINLAND

Communicable diseases—March 16-31, 1925—During the period March 16 to 31, 1925, cases of communicable diseases were reported in Finland as follows: Diphtheria, 65; dysentery, 1; lethargic encephalitis, 3; poliomyelitis, 1; scarlet fever, 81; typhoid fever, 31; paratyphoid, 18. Population, 3,469,402.

GREECE

Plague—Patras—April 5, 1925—A case of plague was reported at Patras, Greece, April 5, 1925.

INDIA

Epidemic cholera—Calcutta—May 9, 1925—Under date of May 9, 1925, epidemic cholera was reported present at Calcutta, India.

ITALY

Malta fever—Syracuse Province—April 6-12, 1925—During the week ended April 12, 1925, a case of Malta fever was reported in the Province of Syracuse, Italy.

MALTA

Communicable diseases—April 1-15, 1925.—During the period April 1 to 15, 1925, communicable diseases were reported in the Island of Malta as follows: Broncho-pneumonia, 9 cases; chicken pox. 4; influenza, 90; pneumonia, 3; lethargic encephalitis, 1 case; Malta (undulant) fever, 9; smallpox, 3; tuberculosis, 9; typhoid fever, 3 cases.

NEW ZEALAND

Epidemic poliomyelitis—November, 1924, to March, 1925.—Information received under date of March 26, 1925, shows that epidemic poliomyelitis (infantile paralysis) was epidemic in New Zealand from about November 25, 1924, through the months of January and February, 1925, with approximately 900 cases (population, 1,334,716). The center of the epidemic prevalence was stated to have moved northward about February 15, from Wellington to the Auckland district, and the disease had appeared in South Island. During the week ended March 2, 1925, 98 cases with 18 deaths were reported.

PANAMA CANAL

Communicable diseases—March, 1925.—During the month of March, 1925, communicable diseases were reported in the Canal Zone and at Colon and Panama as follows:

Disease	Canal Zone		Colon		Panama		Nonresident		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chicken pox	6				29		3		38	
Dysentery					3		4	1	7	1
Hookworm disease			5		53		45		103	
Leprosy			1						1	
Malaria	47		1		3		23	1	74	1
Measles	17				2		1		20	
Meningitis				2						2
Mumps	2								2	
Pneumonia [1]		1		5		18		2		26
Trachoma	2		2						4	
Tuberculosis [1]		1		4		13		4		22
Typhoid fever							1	1	1	1
Whooping cough	7								7	

[1] Many cases are not reported until death occurs.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended May 22, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Mar 8-14, 1925: Cases, 1,953; deaths, 1,145.
Calcutta	Mar 29-Apr 4	49	46	Reported to be epidemic May 9, 1925
Indo-China.				
Saigon	Mar. 15-21	1	1	Including 100 square kilometers of surrounding country.

PLAGUE

Place	Date	Cases	Deaths	Remarks
Egypt				Apr. 9-15, 1925 Cases, 2 Total, Jan 1-Apr 15, 1925 Cases, 23; deaths, 13 Corresponding period year 1924. Cases, 92.
Greece:				
Patras	Apr. 5	1		
India				Mar 8-14, 1925: Cases, 5,800; deaths, 4,848.
Bombay	Mar. 15-21	8	9	
Karachi	Apr. 5-11	1	1	
Madras Presidency	Mar 8-14	80	48	
Iraq				
Bagdad	Mar 22-28	1	1	
Straits Settlements:				
Singapore	Mar. 22-28	3	3	
Union of South Africa				Mar. 22-28, 1925: 1 case, 1 death. On farm. Native
Kroonstad District	Mar. 22-28	1	1	

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Arabia:				
Aden	Apr. 12-18	2		
British South Africa:				
Southern Rhodesia	Mar 19-25	1		Native.
Canada				
British Columbia—Vancouver	Apr. 27-May 3	3		
Ontario—Ottawa	May 3-9	2		
China				
Antung	Mar 30-Apr. 5	1	1	
Canton	Mar 29-Apr 11			Prevalent.
Chefoo	Mar. 15-21			Stated to be prevalent in adults and children, no foreign cases.
Chungking	Mar. 22-Apr. 4			Stated to be widely prevalent; less than in period in year 1924.
Foochow	Mar 22-28			Present
Hongkong	do	5	2	
Manchuria—Dairen	Mar 9-15	2		
Chosen				
Seoul	Mar. 1-31	2		
Colombia.				
Buenaventura	Mar. 29-Apr. 4	1		
Great Britain:				
England and Wales	Apr. 12-18	135		
Greece.				
Saloniki	Feb. 17-Mar. 2	4		
India				Mar. 8-14, 1925: Cases, 5,865; deaths, 1,396.
Bombay	Mar 15-21	81	43	
Calcutta	Mar. 29-Apr. 4	392	260	
Karachi	Apr. 5-11	2		
Madras	Mar. 29-Apr. 4	96	37	
Indo-China:				
Saigon	Mar. 15-28	25	8	Including 100 square kilometers of surrounding country.
Iraq:				
Bagdad	Mar. 22-28	1		
Japan:				
Nagasaki	Apr. 13-19	10	2	
Malta				Apr. 1-15, 1925: Cases, 3.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended May 22, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico:				
Durango	Apr 1-30		13	
Guadalajara	Apr 28-May 4		2	
San Luis Potosi	Apr. 26-May 2		1	
Tampico	Apr. 21-30	2		
Persia:				
Teheran	Jan. 21-Feb. 18		10	
Portugal				
Lisbon	Jan. 4-Mar 14	89		Jan. 4-Apr. 5, 1925: Deaths, 32.
Do	Mar 15-Apr. 25	51		Apr. 6-18, 1925. Deaths, 3.
Oporto	Apr. 12 25	2		
Spain.				
Malaga	Apr. 19-25		1	
Tunis:				
Tunis	Apr. 16-22	14	18	
Turkey:				
Constantinople	Apr. 1-15	3	1	

TYPHUS FEVER

Chosen				
Seoul	Mar. 1-31	4	1	
Greece				
Athens	Apr. 1-10		3	
Mexico				
Durango	Apr. 1-30		1	
San Luis Potosi	Apr. 26-May 2		1	
Portugal:				
Lisbon	Apr 6-12		1	
Tunis				
Tunis	Apr. 16-22	6	2	
Union of South Africa.				
Cape Province	Mar 22-28			Outbreaks.
Natal--				
Durban	do	2		
Yugoslavia				
Belgrade	Apr. 8-14	2		

Reports Received from December 27, 1924, to May 15, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Dec. 27, 1924: Cases, 14; deaths, 13. Dec. 28, 1924-Jan. 24, 1925. Cases, 24, deaths, 17.
Colombo	Nov. 16-22	1		
Do	Jan 11-24	2	2	
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 27,164; deaths, 16,228, Jan. 4-Mar. 7, 1925: Cases, 20,233; deaths, 11,832.
Bombay	Nov 23-Dec 20	4	4	
Do	Jan 18-24	1	1	
Calcutta	Oct. 26-Jan. 3	59	51	
Do	Jan 4-Mar. 21	205	164	
Madras	Nov. 16-Jan 3	69	40	
Do	Jan. 4-Mar. 7	139	99	
Rangoon	Nov 9-Dec. 20	9	2	
Do	Jan. 4-Mar 28	14	10	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 14; deaths, 10 Dec. 1-31, 1924: Cases, 5; deaths, 2.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept. 30	6	5	
Do	Dec. 1-31	1		
Cochin-China	Aug. 1-Dec. 31	10	5	
Saigon	Nov. 30-Dec. 6	1		
Tonkin	Dec. 1-31	1	1	
Siam:				
Bangkok	Nov. 9-29	4	2	
Do	Jan. 18-Mar. 21	8	5	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 15, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 2-Jan 3	30	13	
Do	Jan 18 24	3	1	
Brazil				
Bahia	Jan 4-Apr 4	9	6	
Santos	Year, 1924	2		Bubonic.
British East Africa				
Tanganyika Territory	Nov 23-Dec 27	17	10	
Do	Jan 18-Mar 14	18	12	
Uganda	Aug Dec, 1924	279	243	
Do	Jan 1 31	29	28	
Canary Islands:				
Las Palmas	Jan 21-23	2		Stated to be endemic.
Do	Feb 4	1		Stated to have been infected with plague Sept 30, 1924.
Do	Mar 26	1	1	
Realejo Alto	Dec. 19	3	1	Vicinity of Santa Cruz de Teneriffe
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.
Celebes				
Macassar	Oct 29			Epidemic.
Ceylon				
Colombo	Nov 9-Jan 3	12	9	
Do	Jan 4 Mar 28	16	17	
China:				
Foochow	Dec 28-Jan. 3			Present.
Nanking	Nov. 23-Mar. 7			Do.
Shing Hsien	October, 1924		790	
Ecuador				Mar 16-Apr 15, 1925: Cases, 10; deaths, 4 Rats taken, 22,290, found infected, 60
Daule	Mar 16 31	1		
Chimborazo Province—				
Alausi District	Jan. 14		14	At 2 localities on Guayaquil & Quito Ry.
Guayaquil	Nov 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92.
Do	Jan. 1 Apr 15	68	29	Rats taken, 45,027; found infected, 234.
Naranjito	Feb. 16 Mar 15	1		
Yaguachi	Feb 1-Mar. 15	2	1	
Egypt				Year 1924 Cases, 373. Jan. 1-Apr 1, 1925: Cases, 17; deaths, 9.
City—				
Alexandria	Year 1924	2	2	Last case, Nov 26.
Ismailia	do	1	1	Last case, July 6.
Port Said	do	6	4	Last case, Dec 7
Suez	do	20	13	Last case, Dec 20.
Do	Apr. 2	1	1	Last case, Apr. 2.
Province—				
Beni-Souef	Jan 18	1	1	Last case, Jan. 18.
Dakhalia	Jan. 1 8	1	1	Last case, Jan. 7.
Girgeh	Jan. 9	1	1	Last case, Jan 9.
Kalioubiah	Jan. 5-22	8	2	Last case, Jan. 22.
Menoufieh	Jan. 1-8	7	3	Last case, Jan 3.
Minieh	Apr. 1	1		Last case. Apr 1.
Gold Coast				September-December, 192?: Deaths, 52.
Hawaii:				
Honokaa	Nov. 4	1		Plague-infected rodents found Dec. 9, 1924, and Jan. 15, 1925.
India				Oct 19, 1924, to Jan. 3, 1925: Cases, 28,154; deaths, 21,505. Jan. 4-Mar. 7, 1925. Cases, 38,324; deaths, 31,799.
Bombay	Nov. 22-Jan. 3	4	3	
Do	Jan. 4-17	2	2	
Do	Feb. 8-Mar. 14	26	22	
Calcutta	Jan. 18-24	1	1	
Karachi	Nov 30-Dec. 6	2	1	
Do	Jan. 4-Feb. 21	16	16	
Do	Mar 29-Apr. 4	4	5	
Madras Presidency	Nov. 23-Jan. 3	685	487	
Do	Jan. 4-24	658	511	
Rangoon	Oct. 26-Jan. 3	26	25	
Do	Jan. 4-Mar. 28	157	136	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 15, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China				Aug 1-Sept 30, 1924: Cases, 25; deaths, 20. Dec. 1-31, 1924: Cases, 11; deaths, 11 Corresponding month 1923: Cases, 15; deaths, 5.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Do	Dec 1-31	5	5	
Cambodia	Aug. 1-Sept. 30	18	15	
Do	Dec 1-31	6	6	
Cochin-China	do	3	1	
Saigon	Dec. 25-31	1	1	Including 100 square kilometers of surrounding territory.
Do	Jan. 11-17	2	1	Do.
Iraq	June 29-Jan 3	20	14	
Japan	Aug. 10-Dec. 6	19		
Java:				
East Java—				
Blitar	Nov 11-22			Province of Kediri; epidemic.
Pare	Nov 29			Do.
Samarang	Mar. 22-28	2	2	
Sidoardja	Jan 2			Declared epidemic, Province of Soerabaya.
Soerabaya	Nov. 16-Dec. 31	71	72	
Do	Jan 15-Mar. 11	17	14	Mar. 29-Apr. 4, 1925: 2 plague rats found.
Soerakarta	Feb. 20			Epidemic plague in one locality.
West Java—				
Cheribon	Oct. 14-Nov 3		14	
Do	Nov. 18-Dec. 22		80	
Do	Jan 1-14		44	
Do	Feb 5-11		13	
Do	Feb 19-25		13	
Pasoeroean	Dec. 27			Province. Epidemic in one locality
Pekalongan	Oct. 14-Nov. 3		29	
Do	Nov. 18-Dec. 31		177	Pekalongan Province.
Do	Jan. 1-14		81	
Do	Feb 5-11		36	
Do	Feb. 19-25		38	
Probalingga	Dec. 27			Province. Epidemic.
Tegal	Oct 14-Dec 31		26	
Do	Jan. 1-14		37	Pekalongan Province.
Do	Feb. 5-11		7	
Do	Feb. 19-25		10	
Madagascar:				
Fort Dauphin (port)	Nov. 1-Dec. 15	12	5	
Do	Feb. 1-15	1	1	Bubonic.
Itasy Province	Nov. 1-Dec. 15	4	2	
Do	Feb. 1-28	3	3	
Majunga (port)	Nov. 1-30	1	1	
Moramanga Province				Nov. 1-Dec 15, 1924: Cases, 49; deaths, 34. Jan. 16-Feb. 28, 1925: Cases, 6, deaths, 6.
Tamatave (port)	Nov. 1-30	1	1	
Tananarive Province				Oct. 16-Dec. 31, 1924: Cases, 298; deaths, 274.
Do				Jan 1-Feb. 28: Cases, 357; deaths, 295.
Tananarive (town)	Oct. 16-Nov. 30	8	7	
Do	Dec. 16-31	4	4	
Do	Jan. 1-Feb. 28	4	4	
Mauritius Island				Year 1924: Cases, 161; deaths, 144.
District—				
Flacq	Dec. 1-31	5	4	
Pamplemousses	do	1	1	
Plaines Wilhems	January-December, 1924.	54	47	Not present March, April, May.
Port Louis	February-December, 1924.	101	92	
Mexico:				
Tampico	Apr. 6, 1925			Plague rat found in vicinity of Government wharves.
Morocco:				
Marrakech				Feb. 9, 1925. Present in native quarter of town. Stated to be pneumonic in form and of high mortality.
Nigeria				August-November, 1924: Cases, 387, deaths, 317.
Palestine.				
Jerusalem	Mar. 3-9	1		
Peru:				
Callao	February, 1925	6	6	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 15, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan. 25-Mar. 21	7	6	
Siberia:				
Transbaikalia—				
Turga	October, 1924		3	On Chita Railroad.
Straits Settlements.				
Singapore	Nov. 9-15	1	1	
Do	Jan. 4-Mar 21	20	5	
Do	Mar 28-Apr. 4	4		One plague rat.
Syria:				
Beirut	Jan. 11-20	1		
Turkey.				
Constantinople	Jan 9-15	5	5	
Union of South Africa	Nov. 22-Jan 3	28	15	In Cape Province, Orange Free State, and Transvaal.
Do.	Jan 4-Mar. 21	51	21	
On vessels:				
S. S. Conde				At Marseille, France, Nov. 8, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 31, 1924: Cases, 409. Jan. 1-20, 1925. Cases, 107.
Algiers	Jan 1-Mar. 31	10		
Arabia.				
Aden	Jan 25-Mar 21	12	1	Imported.
Argentina				
Buenos Aires	Mar. 15-21	1		
Belgium	Jan 1-Feb 10	4		
Bolivia.				
La Paz	Nov. 1-Dec 31	20	11	
Do.	Jan 1-Mar. 31		12	
Brazil				
Pernambuco	Nov 9-Jan. 3	100	27	
Do	Jan. 4-Mar. 14	103	50	
British East Africa:				
Kenya—				
Mombasa	Jan. 18-Feb. 28	66	14	
Do	Mar 8-28	29	7	
Uganda—				
Entebbe	Oct. 1-31	4		
Tanganyika Territory	Feb 15-21	1		
British South Africa				
Northern Rhodesia	Oct. 28-Dec 15	57	2	
Do	Jan 27-Feb 2	3		Natives.
Southern Rhodesia	Jan. 29-Mar 18	3	1	
Bulgaria:				
Sofia	Mar. 12-18	1		Varioloid.
Canada:				
Alberta—				
Calgary	Mar 15-21	1		
British Columbia—				
Ocean Falls	Mar. 7-27	6		Very mild.
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-Apr. 12	305		
Do	Apr. 19-25	8		
Victoria	Jan 18-Apr. 25	11		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-Feb. 27	30		
Do	Apr. 5-11	1		
New Brunswick—				
Bonaventure and Gaspe Counties.	Jan. 1-31	1		
Northumberland	Feb. 8-14	1		County.
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33. Dec. 28, 1924, to Apr. 25, 1925: Cases, 69; deaths, 1.
Hamilton	Jan. 24-30	1		
Kingston	Apr. 12-18	1		
Ottawa	Mar. 29-Apr. 4	1		
Welland	Mar. 22-Apr. 25	7		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 15, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Ceylon				July 27-Nov. 29, 1924: Cases, 27; deaths, 1.
Colombo	Jan 18-Feb 7	4		
Do	Mar 8-28	11		
China:				
Amoy	Nov. 9-Feb 21			Present.
Do	Feb 22-Mar. 28		11	
Antung	Nov. 17-Dec 28	5		
Do	Jan 5-Feb 14	15	1	
Do	Mar. 2-29	8		
Canton	Mar. 15-28			Prevalent.
Foochow	Nov. 2-Mar. 21			Present.
Hongkong	Nov. 9-Jan 3	6	2	
Do	Jan. 4-Feb 7	9	7	
Do	Feb. 15-Apr. 4	27	13	
Manchuria—				
Dairen	Jan 19-Feb 1	2		
Harbin	Jan 15-Feb 11	5		
Nanking	Jan. 4-Mar 28			Do.
Shanghai	Dec 7 27	1	2	
Do	Jan. 18-Mar 7		8	
Chosen:				
Seoul	Dec. 1-31	1		
Colombia.				
Buenaventura	Feb 15-28	2		
Santa Marta	Mar 15-28			Present in mild form in localities in vicinity
Cuba.				
Santiago	Apr. 12-18	3	1	
Czechoslovakia				April-June, 1924 Cases, 1; occurring in Province of Moravia.
Dominican Republic:				
Puerta Plata	Mar. 8-21	3		
Dutch Guiana.				
Paramaribo	Apr. 20	1		
Ecuador				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt.				
Alexandria	Nov. 12-Dec. 31	10		
Do	Jan 8 28	8		
Do	Feb 26-Mar. 4	1		
Cairo	Jan 29-Feb. 4	1	1	
Esthonia				Dec. 1 31, 1924: Cases, 2.
France				July-December, 1924: Cases, 81.
Do	January, 1925	10		
Dunkirk	Mar 2 8	1		From vessel In quarantine.
St. Malo	Feb. 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis
Germany				June 29-Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1-10	1		
Gibraltar	Dec. 8-14	1		
Gold Coast				July-December, 1924: Cases, 106; deaths, 1.
Great Britain:				
England and Wales	Nov. 23-Jan. 3	472		
Do	Jan. 4-Apr. 11	1,912		
Newcastle-on-Tyne	Jan 18-Feb. 21	9		
Do	Mar. 1-7	1		
Greece				January-June, 1924: Cases, 170; deaths, 27.
Do				July-December, 1924: Cases, 38; deaths, 26.
Saloniki	Nov. 11-Dec. 22	3		
Haiti:				
Cape Haitien	Mar. 22-Apr. 2	6		
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 12,564; deaths, 2,857. Jan. 4-Mar. 7, 1925: Cases, 32,782; deaths, 7,451.
Bombay	Nov. 2-Jan. 3	30	18	
Do	Jan. 4-Mar. 14	389	190	
Calcutta	Oct. 26-Jan. 8	307	170	
Do	Jan. 4-Mar. 21	2,669	1,875	
Karachi	Nov. 16-Jan. 3	16	2	
Do	Jan 4-Feb. 14	52	6	
Do	Feb. 22-Apr. 4	67	21	
Madras	Nov. 16-Jan. 3	122	48	
Do	Jan. 4-Mar. 7	552	212	
Do	Mar. 15-28	196	83	
Rangoon	Oct. 26-Jan. 3	86	28	
Do	Jan. 4-Feb. 7	287	49	
Do	Feb. 15-Mar. 28	894	127	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 15, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China				Aug 1-Sept. 30, 1924: Cases, 223; deaths, 76. Dec. 1-31, 1924: Cases, 485; deaths, 114.
Province—				
Anam	Aug 1-Sept. 30	49	11	
Do	Dec 1-31	167	26	
Cambodia	Aug. 1-Sept. 30	40	9	
Do	Dec. 1-31	30	13	
Cochin-China				Aug. 1-Sept 30, 1924: Cases, 115; deaths, 49. Dec 1-31, 1924: Cases, 50, deaths, 13.
Saigon	Nov. 16-Jan. 3	17	5	Including 100 square kilometers of surrounding country.
Do	Jan. 4-Feb. 21	32	8	
Do	Mar 1-14	14	3	Do.
Tonkin	Aug 1-Sept 30	19	7	
Do	Dec. 1 31	238	62	
Iraq	June 29-Jan. 10	138	67	
Do	Jan 11-20	4	2	
Bagdad	Nov 9 Dec. 27	2	1	
Do	Mar. 1-7	1		
Italy				June 29-Dec 27, 1924: Cases, 63.
Jamaica				Nov 30, 1924-Jan 3, 1925: Cases, 70 Reported as alastrim.
Do				Jan 4 Apr. 25, 1925: Cases, 275. Reported as alastrim.
Kingston	Nov 30-Dec. 27	4		Reported as alastrim.
Japan				Aug 1 Nov 15, 1924. Cases, 4.
Nagasaki	Feb 9-Apr. 12	20	4	
Taiwan	Jan 1-31	1		
Java:				
East Java—				
Pasoeroean	Oct. 26-Nov 1	9	1	
Do	Nov. 12 19			Epidemic in 2 native villages.
Soerabaya	Oct. 19-Dec 31	685	212	
Do	Jan 15-Mar 11	461	69	
West Java—				
Batam	Oct 14 20	2		
Batavia	Oct 21-Nov. 14	2		
Do	Dec 20 Jan 2	19	4	
Buitenzorg	Dec 25-31	1		Batavia Residency.
Cheribon	Oct 14-Nov. 24	15		
Do	Jan. 1-28	3		
Krawang	Jan 15-21	1		
Pekalongan	Oct 14 Nov. 24	22		
Do	Dec 25-31	3		Province.
Pemalang	Jan 8-14	1		Pekalongan Residency.
Preanger	Nov 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5. Jan. 1-Feb. 28, 1925: Cases, 6.
Lithuania				Jan. 1-31, 1925. Cases, 2.
Mexico:				
Chiapas (State)	Mar. 1			Reported severely prevalent.
Durango	Dec 1-31		5	
Do	Jan. 1-Mar 31		16	
Guadalajara	Dec. 23-29		1	
Do	Jan. 6-Mar. 23		4	
Do	Apr. 21 27	4		
Mexico City	Nov. 23-Dec. 27	5		
Do	Jan. 11-Apr. 18	57		
Monterey				Jan. 24, 1925: Outbreak. Mar. 14, 1925, present.
Oaxaca (State)	Mar. 1			Reported severely prevalent.
Salina Cruz	Dec 1-31	1	1	
Do	Feb 22-Mar. 31	7	1	
Saltillo	Feb 22-Apr 11		2	
San Luis Potosi	Mar. 29 Apr. 11		2	
Tampico	Dec 11-31	5	4	
Do	Jan. 1-Apr. 20	64	20	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan. 5-Apr. 19		39	
Villa Hermosa	Dec. 28-Jan 10			Present. Locality, capital, State of Tabasco.
Yucatan State	Apr 5-11			In country towns.
Nigeria				January-June, 1924: Cases, 357; deaths, 87.
Do				July-November, 1924: Cases, 87; deaths, 25

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 15, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Paraguay:				
Asuncion	Jan. 4-10		1	
Persia:				
Teheran	Sept. 23-Dec. 31		12	
Do	Jan. 1-31		10	
Peru:				
Arequipa	Nov. 24-30		1	
Do	Jan. 1-31		3	
Philippine Islands.				
Manila	Mar. 29-Apr. 4	3		
Poland				Sept 21-Dec. 28, 1924: Cases, 30; deaths, 2. Jan. 4-Feb. 7, 1925: Cases, 13, deaths, 1.
Portugal:				
Lisbon	Dec 7, Jan. 3	17		
Do	Jan 4-Apr. 5	78	14	
Oporto	Nov. 30-Dec. 27	3	2	
Do	Jan 11-Mar. 14	3		
Russia				January-June, 1924: Cases, 18,229. July-November, 1924: Cases, 3,665.
Senegal:				
Dakar	Mar 16-22	4		
Siam:				
Bangkok	Dec 28-Jan 3	1	1	
Do	Jan. 18-Feb 21		19	
Do	Mar 1-21	11	4	
Sierra Leone.				
Freetown	Feb. 7-14	2		From S. S. Elmina.
Kaiyima	Mar 9-15	1		
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Do	Mar 19-25		1	
Cadiz	Nov 1-Dec. 31		51	
Do	Jan 1-Feb. 28		10	
Madrid	Year 1924		40	
Do	January-February		13	
Malaga	Nov 23-Jan. 3		97	
Do	Jan 4-Apr. 18		95	
Valencia	Nov 30-Dec. 6	2		
Do	Feb. 15-Mar. 28	5		
Straits Settlements:				
Singapore	Feb. 22-Apr. 4	4	1	
Switzerland:				
Berne	Mar 15-21	1		
Lucerne	Nov 1-Dec. 31	19		
Do	Jan 1-31	24		
Syria:				
Aleppo	Nov 23-Dec 27	13		
Do	Jan. 4-Feb. 28	71	18	
Beirut	Feb. 11-20	1		
Damascus	Jan 6-13	2		
Do	Feb. 11-20	22		
Tripoli:				
Tripoli	July 14-Jan. 2	53		
Tunis				
Tunis	Nov 25 Dec. 29	42	35	
Do	Jan 1-Apr. 15		307	
Turkey:				
Constantinople	Dec. 13-19	5		
Do	Mar. 16-22	2		
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 14. Jan. 1-31, 1925: Cases, 4—natives
Cape Province	Feb 1-21			Outbreaks.
Do Aar District	Jan 25-31			Outbreak at railway camp.
Do	Nov. 9-Jan 17			Outbreaks.
Natal	Mar. 1-7			Do.
Orange Free State	Nov. 2-8			Do.
Ladybrand District	Jan. 15-31			Outbreak on farm.
Transvaal	Nov. 9-Jan. 10			Do.
Do	Feb. 1-21			Outbreaks.
Uruguay				January-June, 1924: Cases, 101; deaths, 2.
Do				July-November, 1924: Cases, 53; deaths, 5.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 15, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Yugoslavia:				
Belgrade	Mar. 1-Apr. 7	6		
On vessel.				
S. S. Eldridge	Mar. 23	1		At Port Townsend, from Yokohama and ports.
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St. Malo, France, January, 1924, from Sfax Tunis; believed to have imported smallpox infection.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 101; deaths, 14.
Algiers	Nov 1-Dec 31	5	1	
Do	Jan. 1-Mar. 31	13	6	
Argentina:				
Rosario	Jan. 1-31		1	
Bolivia				
La Paz	Nov. 1-Dec. 31	3		
Do	Jan. 1-31	2		
Do	Mar. 1-31	1		
Bulgaria				January-June, 1924: Cases, 191; deaths, 28
Do				July-October, 1924: Cases, 5.
Chile:				
Concepcion	Nov 25-Dec 1		1	
Do	Jan. 6-12		2	
Do	Jan 27-Feb. 2		1	
Iquique	Nov 25-Dec. 1		2	
Do	Feb 1-Mar. 28		2	
Talcahuano	Nov 16-Dec 20		5	
Do	Jan 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan 11-Mar. 28		17	
China:				
Antung	Mar. 16-22	1		
Chosen.				
Chemulpo	Feb. 1-28	1		
Seoul	Nov 1-30	1	1	
Do	Feb 1 28	2	1	
Czechoslovakia				December, 1924. Cases, 5.
Do	Jan. 1-31	14		
Egypt.				
Alexandria	Dec 3-9	1	1	
Do	Mar. 12-18	1		
Cairo	Oct. 1-Dec. 23	13	8	
Do	Jan 22-28	1		
Esthonia				Dec. 1-31, 1924. Cases, 5.
Do	Jan 1-31	4		
France				July-October, 1924 Cases, 7.
Gold Coast				Oct 1-31, 1924 1 case.
Greece				May-June, 1924. Cases, 116; deaths, 8
Do				July-December, 1924: Cases, 40; deaths, 4.
Athens	Feb. 1-Mar. 31		7	
Saloniki	Nov. 17-Dec. 15	3	2	
Do	Jan. 25-31	1		
Japan				Aug. 1-Nov. 15, 1924: Cases, 2.
Latvia				October-December, 1924: Cases, 30. Feb. 1-28, 1925: Cases, 11.
Lithuania				August-October, 1924: Cases, 15; deaths, 1.
Do				Jan. 1-31, 1925: Cases, 27; deaths, 2.
Mexico:				
Durango	Dec. 1-31		1	
Do	Mar 15-31	1	1	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District.
Do	Jan. 11-Apr. 18	91		
San Luis Potosi	Mar. 8-14		1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 15, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Morocco				November, 1924: Cases, 5.
Palestine				Nov. 12–Dec. 29, 1924: Cases, 10.
Ekrón	Dec. 23–29	1		
Jerusalem	do	2		
Do	Jan. 20–26	1		
Mikveh Israel	do	1		
Petach-Tikvah	Mar. 24–30	1		
Ramleh	Feb. 10–Mar. 23	2		
Tiberias	Feb. 24–Mar. 2	2		
Peru:				
Arequipa	Nov. 24–Dec. 31		3	
Poland				Sept 28, 1924–Jan. 3, 1925: Cases, 751; deaths, 57. Jan. 4–Feb. 7, 1925: Cases, 581; deaths, 49.
Portugal:				
Lisbon	Dec. 29–Jan. 4		2	
Oporto	Jan. 4–Feb. 7	2		
Rumania				January–June, 1924: Cases, 2,906; deaths, 328.
Do				July–December, 1924: Cases, 288; deaths, 38
Constanza	Dec. 1–20	1		
Do	Feb 1–28	2		
Russia				Jan. 1–June 30, 1924: Cases, 95,682. July–November, 1924: Cases, 34,729.
Leningrad	June 29–Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec 21–27		1	
Sweden:				
Goteborg	Jan. 18–Feb. 28	2		
Tunis				July 1–Dec 20, 1924: Cases, 40.
Tunis	Mar. 5–25	9	1	
Do	Apr. 2–15	18	3	
Turkey.				
Constantinople	Nov. 15–Dec. 19	6	1	
Do	Jan. 2–Mar. 7	9	1	
Union of South Africa				Nov. 1–Dec. 31, 1924: Cases, 345; deaths, 87. Jan. 1–Feb. 28, 1925 Cases, 159; deaths, 17; native. In white population cases, 12.
Cape Province	Nov. 1–Dec. 31	126	24	
Do	Jan. 1–Mar. 15	74	9	
East London	Nov. 16–22	1		
Do	Jan. 18–Apr. 4	3	2	
Port Elizabeth	Feb. 22–28	1		
Natal	Nov 1–Dec. 31	130	50	
Do	Jan. 1–Feb. 28	43	5	
Do	Mar. 1–7			Outbreaks.
Durban	Feb. 15–Mar. 14	2		
Orange Free State	Nov. 1–Dec 31	59	8	
Do	Jan. 1–Feb. 28	32	3	Native.
Transvaal	Nov. 1–Dec. 31	30	5	
Do	Jan. 1–Feb. 28	10		Do.
Yugoslavia				Aug. 3–Oct. 18, 1924: Cases, 17; deaths, 2. Mar. 8–14, 1925: Cases, 1.
Belgrade	Nov. 24–Dec. 28	5		

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Gold Coast	October–November, 1924.	4	4	
Salvador:				
San Salvador	June–October, 1924.	77	28	Last case, Oct. 22, 1924.

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TREASURY DEPARTMENT

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SPECIAL ARTICLES

Effective Agent in Preventing Pellagra-like Syndrome in Dogs
Public Health Courses at Summer Schools, 1925
Establishments Licensed for Biologic Products

WASHINGTON
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1925

UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst Surg Gen B. J. LLOYD, *Chief of Division*

The PUBLIC HEALTH REPORTS are issued weekly by the United States Public Health Service through its Division of Sanitary Reports and Statistics, pursuant to acts of Congress approved February 15, 1893, and August 14, 1912.

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PUBLIC HEALTH REPORTS

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THE EFFECTIVE AGENT IN THE PREVENTION OR ALLEVIATION OF THE CHITTENDEN-UNDERHILL PELLAGRA-LIKE SYNDROME IN DOGS[1]

By FRANK P. UNDERHILL, Professor of Pharmacology and Toxicology, and LAFAYETTE B. MENDEL, Professor of Physiological Chemistry, Yale University

The pellagra-like syndrome in dogs described in 1917 by Chittenden and Underhill (1) has been adjudged by Goldberger (2) and his associates as clinically identical with "black tongue" occurring spontaneously in dogs, principally in the South, and presenting a geographic distribution in the United States singularly like that of pellagra. Goldberger is also of the opinion that black tongue in dogs may prove to be an analogue of pellagra in man. It was clearly recognized by Chittenden and Underhill that faults in the diet were undoubtedly responsible for the abnormal condition under discussion. These authors indicated the character of the dietary fault in the following words: "From the facts enumerated the conclusion seems tenable that the abnormal state may be referred to a deficiency of some essential dietary constituent or constituents, presumably belonging to the group of hitherto unrecognized but essential components of an adequate diet."

The importance of the possible relationship of this disease in dogs to human pellagra has been the impetus for the continuation of the investigation which has had for its aim the determination of the cause and possible prevention or cure of the condition. Begun by the present authors (3) in 1918, the investigation is still incomplete, but sufficient data have now been accumulated to warrant the publication of a brief note giving the present status of the experiment and presenting certain facts which may be regarded as the basis of a working hypothesis for work now being carried forward which it is anticipated will eventually elucidate the problem.

The investigation has been conducted from two standpoints, (*a*) that of prevention of the disease, and (*b*) that of cure once the disease has been induced.

[1] From the Departments of Pharmacology and Toxicology and Physiological Chemistry, Yale University, New Haven, in cooperation with Field Studies in Nutrition, United States Public Health Service.

Having established by actual trial a dietary adequate to maintain dogs, a single known deficiency has been created in an endeavor to determine the character of the protective substance. It may be stated at once that the syndrome is associated with a lack of some unknown constituent of butterfat. This substance will prevent the incidence of the disease in dogs, or, if the disease is once established, will either alleviate or cure it. The unknown substance present in butter is not identical with fat soluble A, since active cod-liver oil fails to protect against the disease or to modify appreciably the syndrome once established. It is also quite clear that if this effective agent partakes of the nature of a vitamin, its function is quite different from functions of vitamins hitherto recognized.

There has been some discussion relative to the rôle played by protein in the production of this pathological condition, and in the present investigation particular attention has been paid to this feature. The conclusion has been reached that fresh beef possesses some protective action, since it is easier to induce the disease in animals on a low meat diet than when much meat is given. In the absence of a sufficiency of the unknown effective agent present in butter, the disease may be induced on a diet containing much meat, but a longer period of time is necessary. The same statements are true for casein which has been purified by boiling with alcohol. Whether the slight protective action of casein and raw meat is associated with the proteins themselves, or whether small quantities of the protective substance present in butterfat is included in raw meat and purified casein, is difficult of determination. It is quite evident, however, that the condition is not to be ascribed directly to a low protein content of the diet.

The nature of the protective substance in butter has not yet been determined. Its content in different samples of butter varies considerably, the variation apparently being seasonal, since butter made in the late spring and early summer is much richer in the effective agent than that made in other seasons of the year. Moreover, butter of known origin and rich in the protective substance gradually loses its effectiveness when kept in cold storage for a period of approximately one year or less. At times, at least, this loss in effectiveness against the disease is associated with a distinct loss in the color of the butter.

The observation that loss of protective action is accompanied by diminution in color led to the possibility that there might be a functional relationship between the color and the effective agent of butter. It is well known that the carotinoids give to butter its characteristic color. Thus far no function has been ascribed to carotinoids in the animal body, although at one time Steenbock and his associates tentatively advanced the hypothesis of the identity of carotin and

the fat soluble A. Certain it is that, in general, the two have a similar distribution. The three food substances, butterfat, egg yolk, and carrots, contain carotinoids. In butterfat and carrots, carotin is preeminent; whereas in egg yolk the chief coloring matter is xanthophyll, carotin being present in small quantities only.

In view of the possible relationship in butterfat of color to protective action against the Chittenden and Underhill syndrome, experiments have been carried out with both egg yolk and carrots as a substitute for butterfat. The results have demonstrated that egg yolk confers upon the organism of the dog a certain degree of protection, but is not as effective as butterfat. Whether this difference is due to the fact that egg yolk contains xanthophyll rather than carotin, can not be stated at present. There is also the possibility that egg yolk contains variable quantities of carotin which may account for some of our results in which certain lots of eggs appear to be more potent than others.

Carrots, which may probably be considered as the best source of carotin, are particularly effective in alleviating the Chittenden and Underhill syndrome when it is once initiated. We have been so impressed with the efficacy of carrots as a curative agent that, particularly in view of the remedial potency of the yellow colored egg yolk and butter, we have adopted as a working hypothesis the possibility that the effective agent is either a natural pigmentary substance or some unidentified compound associated therewith.

The results of various investigations in this and related fields may also find explanation when interpreted through the medium of such an hypothesis.

The investigation is being continued.

REFERENCES

(1) Chittenden and Underhill: Am. J. Physiol., 1917, **44**, p. 13.
(2) Goldberger et al: Pub. Health Rep., 1922, **37**, p. 1063; 1923, **38**, p. 2711.
(3) The earlier experiments in this investigation were made possible through grants from the Bache Fund of the National Academy of Sciences, and the Russell Sage Institute of Pathology.

PUBLIC HEALTH COURSES TO BE GIVEN AT UNIVERSITY SUMMER SCHOOLS, 1925

An increasing number of universities and colleges of the United States, apparently, are offering courses in various public health subjects at their summer sessions. In some instances an extensive program of courses is presented, including virtually every subject which a health officer or physician might desire.

Columbia University has issued a separate announcement of courses in public health and preventive medicine and medical courses, some of three and some of six weeks' duration—over 90 courses in all. These are offered under the following heads: Public health and preventive medicine, nursing education, physical education, nutrition, special courses for social workers, and medical courses.

The University of Michigan also presents a separate announcement of courses in hygiene, public health, and related subjects—a total of approximately 90 courses, covering a wide field of subjects of interest to sanitarians and physicians. In addition to the work at the university in Ann Arbor, three courses are to be given at the laboratory of the Michigan Department of Public Health in Lansing.

The Harvard Medical School announces graduate courses in virtually all branches of medicine and the medical sciences.

The University of Colorado offers approximately 20 courses at Boulder, of general interest to sanitarians, and 9 courses at the School of Medicine in Denver, of special interest to both physicians and sanitarians.

Both the University of Iowa and the University of California, which conducted public health summer schools in 1924, again offer attractive lists of courses.

Rutgers University, in cooperation with the New Jersey State Department of Health, presents a unique program of courses for health officers and public health nurses. Lectures will be given on Friday and Saturday of each week. Courses for public health nurses will be offered as a part of a more extensive program. Courses for health officers and sanitary inspectors will be completed during the present summer session.

Among the lecturers giving courses at these various institutions this year are Richard A. Bolt, Hugh Cabot, Michael M. Davis, Haven Emerson, John N. Force, Allan W. Freeman, H. W. Hill, L. L. Lumsden, E. V. McCollum, Richard M. Olin, Earle B. Phelps, M. J. Rosenau, Thomas W. Salmon, Henry C. Sherman, John Sundwall, Philip Van Ingen, Henry M. Vaughan, Frankwood Williams, and Francis Wood.

Following is a list of the universities and colleges which have submitted to the United States Public Health Service announcements of their courses for the summer of 1925, together with a list of institutions offering courses especially for public health nurses. Inquiries for detailed information should be sent to the addresses given.

UNIVERSITIES OFFERING COURSES OF GENERAL INTEREST TO PHYSICIANS AND SANITARIANS

University or college	Place	Number of public health courses	Date of summer session	Duration of courses
Columbia	New York	90	July 6–Aug. 14	3 and 6 weeks.
University of Michigan.	Ann Arbor Lansing	90	June 22–Aug. 14	6 and 8 weeks.
University of Colorado.	Boulder Denver	19 9	June 22–July 27 July 28–Aug. 28	Two terms of 5 weeks each.
University of Minnesota.	Minneapolis	15	June 19–Aug. 1 Aug. 1–Sept. 5	6 weeks. 5 weeks.
University of Iowa.	Iowa City	50 6	June 15–July 24 July 27–Aug. 28	6 weeks. 5 weeks.
University of California.	Berkeley	8	June 22–Aug. 1	6 weeks.
University of Utah.	Salt Lake City	7	June 10–July 22 July 27–Aug. 28	6 weeks. 5 weeks.
Utah Agricultural College.	Logan	7	June 15–July 25 July 27–Aug. 29	6 weeks. 5 weeks.
Massachusetts Institute of Technology.	Cambridge	5	June 15–Sept. 15	Courses of varying lengths.
University of Oregon	Eugene Portland	2 2	June 22–July 31	6 weeks.
Harvard Medical School.	Boston	([1])	June 1–Sept. 30	17½ weeks.
Lehigh University	Bethlehem, Pa.	6	July 6–Aug. 19	6½ weeks.
New York School of Social Work.	New York	3	July 6–Aug. 15	6 weeks.

[1] Numerous.

UNIVERSITIES AND COLLEGES OFFERING COURSES OF SPECIAL INTEREST TO PUBLIC HEALTH NURSES

University or college	Place	Time
University of California	Berkeley	June 22–Aug. 1.
Southern branch	Los Angeles	June 22–Aug. 8.
University of Iowa	Iowa City	6 weeks.
University of Michigan	Ann Arbor	June 23–Aug. 14.
University of Minnesota	Minneapolis Field service	June 19–Aug. 1. June 19–Sept. 26.
Columbia University	New York	July 6–Aug. 14.
Western Reserve	Cleveland	May 4–Sept. 4.

UNIVERSITIES AND COLLEGES OFFERING COURSES OF SPECIAL INTEREST TO PUBLIC HEALTH NURSES—continued

University or college	Place	Time
Pennsylvania School of Social and Health Work.	Philadelphia	July 6–Aug. 15.
Stanford University	Palo Alto	June 23 Aug. 29.
Smith College (psychiatric work)	Northampton	July 3-Aug. 29.
Harvard Medical School (physiotherapy).	Boston	June 16-Aug. 18.
Peabody College	Nashville, Tenn	June 8–July 16.
University of Washington	Seattle	6 weeks.
University of Chicago	Chicago	June 22-July 29.
FOR SCHOOL NURSES		
Hyannis Normal School	Hyannis, Mass	Not stated.
State Normal and Training School	Oswego, N. Y.	July 6 Aug. 14.
Pennsylvania State College	State College, Pa	8 weeks.

UNIVERSITIES AND COLLEGES OFFERING COURSES OF SPECIAL INTEREST TO TEACHERS, PHYSICAL DIRECTORS, AND SCHOOL NURSES

University or college	Place	Number of public health courses	Time
George Peabody College	Nashville, Tenn	50	June 8–Aug. 26.
Harvard University	Cambridge	Numerous.	6 weeks.
University of Chicago	Chicago	23	June 22-July 29, July 30 Sept. 4.
Pennsylvania State College.	State College, Pa	22	June 29–Aug. 7.
University of Pennsylvania.	Philadelphia	21	July 6–Aug. 15.
East Stroudsburg State Normal School.	East Stroudsburg, Pa.		9 weeks.
Iowa State College of Agriculture and Mechanic Arts.	Ames, Iowa	19	June 13–July 22, July 21–Aug. 28.
Cornell University	Ithaca, N. Y	18	July 6–Aug. 14.
New York University	New York City	15	July 7–Aug. 14.
University of Virginia	University, Va	14	June 24.
Milwaukee State Normal School.	Milwaukee, Wis	13	June 22–July 31.
University of Southern California.	Los Angeles	13	June 29–Aug. 7.
Iowa State Teachers College.	Cedar Falls, Iowa	12	June 3–Aug. 21.

UNIVERSITIES AND COLLEGES OFFERING COURSES OF SPECIAL INTEREST TO TEACHERS, PHYSICAL DIRECTORS, AND SCHOOL NURSES—continued

University or college	Place	Number of public health courses	Time
Illinois State Normal University.	Normal, Ill	Several.	12 weeks.
State Normal School	Indiana, Pa	Several.	
Alfred University	Alfred, N. Y	Several.	July 1–Aug. 12.
Southwest Texas Teachers College.	San Marcos, Tex	Several.	
University of Kansas	Lawrence, Kans	Several.	June 11 July 18.
New Haven Normal School of Gymnastics.	New Haven, Conn	12	July 20–Aug. 29.
Hunter College	New York City	9	July 6–Aug. 14.
Stout Institute	Menomonie, Wis	9	June 22–Aug. 21.
Colorado College	Colorado Springs	8	June 15–July 25.
State Teachers College	San Diego, Calif	8	June 29–Aug. 7.
Oklahoma Agricultural and Mechanical College.	Stillwater, Okla	8	June 1–July 30.
American College of Physical Education.	Chicago, Ill	7	June 22–Aug. 1.
Johns Hopkins University.	Baltimore, Md	7	June 30–Aug. 7.
University of New Hampshire.	Durham, N. H	7	June 24–Aug. 7.
Florida State College for Women.	Tallahassee, Fla	6	June 16–Aug. 8.
University of Pittsburgh.	Pittsburgh, Pa	6	June 29–Aug. 7.
Willamette University	Salem, Oreg	6	June 20–July 31. Aug. 3–Sept. 11.
Bethany College	Lindsborg, Kans	5	
Clarendon College	Clarendon, Tex	5	10 weeks-June 3.
Fordham University	New York City	5	July 6 Aug. 14.
Geneva College	Beaver Falls, Pa	5	June 15 Aug. 15.
Morehouse College	Atlanta, Ga	5	June 15–July 25.
State Normal School	West Liberty, W. Va.	5	June 16–Aug. 14.
University of Florida	Gainesville, Fla	5	July 16–Aug. 7.
University of Kentucky	Lexington	5	11 weeks.
Bucknell University	Lewisburg, Pa	4	July 6–Aug. 14.
Cleveland School of Education.	Cleveland	4	June 22–July 31.
Cumberland Valley State Normal School.	Shippensburg, Pa	4	June 15–Aug. 15.
Extension Summer School, Iowa State Teachers College.	Corydon, Iowa	4	June 3–Aug. 22.

UNIVERSITIES AND COLLEGES OFFERING COURSES OF SPECIAL INTEREST TO TEACHERS, PHYSICAL DIRECTORS, AND SCHOOL NURSES—continued

University or college	Place	Number of public health courses	Time
Mount Shasta summer session, Chico State Teachers College.	Mount Shasta, Calif	4	June 22–July 31.
Muskingum College	New Concord, Ohio	4	June 15–Aug. 29.
North Carolina College for Women.	Greensboro, N. C	4	June 16–July 27.
College of Puget Sound	Tacoma, Wash	4	9 weeks.
University of Akron	Akron, Ohio	4	June 22–July 31.
University of Denver	Denver, Colo	4	June 15 July 24, July 27–Aug. 28.
University of Missouri	Columbia, Mo	4	June 6–Aug. 1.
Atlanta University	Atlanta, Ga.	3	June 9–July 31.
Bluefield Institute	Bluefield, W. Va	3	9 weeks.
Carthage College	Carthage, Ill.	3	June 9–July 18.
Central Wesleyan College.	Warrenton, Mo	3	
Colored Agricultural and Normal University.	Langston, Okla	3	12 weeks.
Cullowhee State Normal School.	Cullowhee, N. C	3	June 2 Aug. 22.
Edinboro State Normal School.	Edinboro, Pa	3	
Grove City College	Grove City, Pa	3	June 23–Aug. 21.
Teachers' College of Indianapolis.	Indianapolis, Ind	3	June 16–Aug. 26.
Marshall College	Huntington, W. Va.	3	June 8–Aug. 7.
Midland College	Fremont, Nebr	3	Do.
Oregon State Agricultural College.	Corvallis, Oreg.	3	June 22–July 31.
Roanoke College	Salem, Va	3	June 15–July 25. July 25–Aug. 29.
Sam Houston State Teachers' College.	Huntsville, Tex	3	June 1–Aug. 23.
State College of Washington.	Pullman, Wash	3	June 20–Aug. 14.
State Normal School	Cheney, Wash	3	June 1–Aug. 13.
State Normal School	West Chester, Pa	3	June 15–Aug. 15.
State Teachers' College	Harrisonburg, Va	3	June 15–Aug. 28.
Tulane University	New Orleans, La	3	June 15–July 25.
University of North Dakota.	University, N. Dak.	3	8 weeks, June 10.
West Virginia University.	Morgantown, W. Va.	3	11 weeks.
Wilberforce University	Wilberforce, Ohio	3	June 22–Aug. 1.

There are approximately 70 other institutions which offer only one or two courses in the public health field, or which do not state how many such courses are included in their summer school curricula.

BIOLOGICAL PRODUCTS

ESTABLISHMENTS LICENSED FOR THE PROPAGATION AND SALE OF VIRUSES, SERUMS, TOXINS, AND ANALOGOUS PRODUCTS

The following table contains a list of the establishments holding licenses issued by the Treasury Department in accordance with the act of Congress approved July 1, 1902, entitled "An act to regulate the sale of viruses, serums, toxins, and analogous products in the District of Columbia, to regulate interstate traffic in said articles, and for other purposes."

The licenses granted to the following establishments for the products mentioned do not imply an indorsement of the claims made by the manufacturers for their respective preparations. The granting of a license means that inspections of the establishment concerned and laboratory examinations of samples of its products are made regularly to insure the observance of safe methods of manufacture, to ascertain freedom from contamination, and to determine the potency of diphtheria antitoxin, tetanus antitoxin, botulinus antitoxin, antidysenteric serum, antimeningococcic serum, antipneumococcic serum, bacterial vaccines, prepared from typhoid bacillus, paratyphoid bacillus A, paratyphoid bacillus B, diphtheria toxin-antitoxin mixture, and diphtheria toxin for Schick test, the only products for which potency standards or tests have been established.

The enumeration of the products is as follows: Serums are placed first, the antitoxins, being the older and more important, heading the list. The other products are arranged generally in the order of their origin. The items in each class are arranged alphabetically.

Establishments Licensed and Products for which Licenses have been Issued

AMERICAN ESTABLISHMENTS

Parke, Davis & Co., Detroit, Mich.—License No. 1:

Diphtheria antitoxin; scarlet fever streptococcus antitoxin; tetanus antitoxin; antianthrax serum; antidysenteric serum; antigonococcic serum; antimeningococcic serum; antipneumococcic serum, antistreptoccic serum; hemostatic serum (Lapenta); normal horse serum, thyroidectomized horse serum; vaccine virus, rabies vaccine (Cumming); tuberculin old, tuberculin T. R.; tuberculin B E.; tuberculin B F; bacterial vaccines made from acne bacillus, acne diplococcus, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, prodigiosus bacillus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus and typhoid bacillus; diphtheria toxin-antitoxin mixture; diphtheria toxin for Schick test; pollen extract; modified bacterial derivatives made from colon bacillus, gonococcus, paratyphoid bacillus A, paratyphoid bacillus B, pneumococcus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus.

H. K. Mulford Co., Philadelphia, Pa.—License No. 2.

Diphtheria antitoxin; perfringens antitoxin; scarlet fever streptococcus antitoxin; tetanus antitoxin; antianthrax serum; antidysenteric serum; antigonococcic serum; antimelitensis serum; antimeningococcic serum; antipneumococcic serum; antistreptococcic serum; normal horse serum; vaccine virus; rabies vaccine (Pasteur); rabies vaccine (killed virus); tuberculin old; tuberculin T. R.; tuberculin B. E.; tuberculin B. F.; tuberculin proteose-free (Lyons); bacterial vaccines made from acne bacillus, cholera vibrio, colon bacillus, dysentery bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, micrococcus melitensis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, plague bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus, sensitized bacterial vaccines made from acne bacillus, cholera vibrio, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; diphtheria toxin-antitoxin mixture, diphtheria toxin for Schick test; pollen extract; animal epidermal extract; animal food extract, vegetable food extract, poison ivy extract; pneumococcus antibody solution.

Sloe Laboratories, Swiftwater, Pa.—License No. 6:

Diphtheria antitoxin; tetanus antitoxin; normal horse serum, vaccine virus; bacterial vaccines made from colon bacillus, gonococcus, paratyphoid bacillus A, paratyphoid bacillus B, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus.

The Cutter Laboratory, Berkeley, Calif.—License No 8

Diphtheria antitoxin, tetanus antitoxin; antistreptococcic serum; normal horse serum; vaccine virus; rabies vaccine (Pasteur); rabies vaccine (killed virus), tuberculin old, tuberculin B. F ; bacterial vaccines made from acne bacillus, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, penumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; diphtheria toxin-antitoxin mixture, diphtheria toxin for Schick test, pollen extract.

Bureau of Laboratories, Department of Health, New York City —License No 14

Diphtheria antitoxin; tetanus antitoxin, antimeningococcic serum, antipneumococcic serum; normal horse serum, vaccine virus, rabies vaccine (Pasteur); tuberculin old; and bacterial vaccines made from gonococcus, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus, diphtheria toxin-antitoxin mixture, diphtheria toxin for Schick test.

Lederle Antitoxin Laboratories, Pearl River, N Y.—License No 17:

Diphtheria antitoxin; scarlet fever streptococcus antitoxin, tetanus antitoxin, antianthrax serum; antidysenteric serum, antigonococcic serum, antimeningococcic serum; antipneumococcic serum; antistreptococcic serum, measles immune serum, normal horse serum, vaccine virus, rabies vaccine (Pasteur), rabies vaccine (killed virus); tuberculin old, tuberculin B E., tuberculin B F.; bacterial vaccines made from acne bacillus, cholera vibrio, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, plague bacillus, pneumococcus, pseudodyphtheria bacillus, staphylococcus albus, staphylococcus aureus, staphylococcus citreus, streptococcus, and tyhpoid bacillus; diphtheria toxin-antitoxin mixture; pollen extract, poison ivy extract; diphtheria toxin for Schick test

Bacterio-Therapeutic Laboratory, Asheville, N C.—License No 23.

Watery extract of tubercle bacilli (von Ruck); modified tubercle bacillus derivative (von Ruck).

G. H Sherman, M D., Inc , East Jefferson Avenue, Detroit, Mich.—License No. 30

Bacterial vaccines made from acne bacillus, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, nonvirulent tubercle bacillus, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacilius, pollen extract.

The Abbott Laboratories, 4735 East Ravenswood Avenue, Chicago, Ill.—License No. 43.

Bacterial vaccines made from acne bacillus, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus, pollen extract.

Dr. W. T. McDougall, 640 Minnesota Avenue, Kansas City, Kans.—License No. 49:

Rabies vaccine (Pasteur).

St. Louis Pasteur Institute, 3514 Lucas Avenue, St. Louis, Mo.—License No. 50:

Rabies vaccine (dilution method).

The Upjohn Co., Kalamazoo, Mich.—License No. 51:

Bacterial vaccines made from colon bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; pollen extract.

E. R Squibb & Sons' Research and Biological Laboratories, New Brunswick, N. J.—License No. 52:

Diphtheria antitoxin; scarlet fever streptococcus antitoxin; tetanus antitoxin; antigonococcic serum; antimeningococcic serum; antipneumococcic serum; antistreptococcic serum, normal horse serum; vaccine virus; rabies vaccine (Pasteur); bacterial vaccines made from acne bacillus, colon bacillus Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, staphylococcus citreus, streptococcus, and typhoid bacillus, leucocytic extract from the horse; diphtheria toxin-antitoxin mixture; diphtheria toxin for Schick test; pollen extract, arsphenamine; neoarsphenamine; sodium arsphenamine; sulpharsphenamine, solution of arsphenamine

Laboratory of Clinical Pathology, Thirty-first Street and Troost Avenue, Kansas City, Mo—License No. 53.

Rabies vaccine (Pasteur).

Dr. James McI. Phillips, 2057 North High Street, Columbus, Ohio—License No 54.

Rabies vaccine (dilution method)

Eli Lilly & Co, Indianapolis, Ind—License No 56.

Diphtheria antitoxin, scarlet fever streptococcus antitoxin; tetanus antitoxin, antimeningococcic serum, antistreptococcic serum normal horse serum, vaccine virus, rabies vaccine (Harris), tuberculin-old; tuberculin T R, tuberculin B F, tuberculin B F.; bacterial vaccines made from acne bacillus, cholera vibrio, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, meningococcus, micrococcus catarrhalis. paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, plague bacillus, pneumococcus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus, diphtheria toxin-antotoxin mixture, diphtheria toxin for Schick test

Swan Myers Co, 219 North Senate Avenue, Indianapolis, Ind—License No 58

Bacterial vaccines made from acne bacillus, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, micrococcus tetragenus, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus, pollen extract.

Gilliland Laboratories, Marietta, Pa.—License No 63:

Diphtheria antitoxin; tetanus antitoxin; antimeningococcic serum; antipneumococcic serum; anti streptococcic serum, normal horse serum. vaccine virus; rabies vaccine (Pasteur); tuberculin old; tuberculin B. E, tuberculin B F; bacterial vaccines made from acne bacillus, gonococcus, influenza bacillus, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus, diphtheria toxin-antitoxin mixture, diphtheria toxin for Schick test.

Antitoxin and Vaccine Laboratory, Department of Public Health, Commonwealth of Massachusetts, Jamaica Plain, Boston 30, Mass.—License No 64:

Diphtheria antitoxin; antimeningococcus serum, antipneumococcus serum; vaccine virus; bacterial vaccines made from paratyphoid bacillus A, paratyphoid bacillus B, and typhoid bacillus; diphtheria toxin-antitoxin mixture, diphtheria toxin for Schick test

United States Standard Products Co, Woodworth, Wis.—License No 65:

Diphtheria antitoxin, scarlet fever streptococcus antitoxin, tetanus antitoxin, normal horse serum; bacterial vaccines made from acne bacillus, colon bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid, bacillus B, pertussis bacillus, pneumococcus, pseudodiphtheria bacillus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus, diphtheria toxin-antitoxin mixture; diphtheria toxin for Schick test.

D L. Harris Laboratories, Metropolitan Building, St Louis, Mo—License No 66.

Rabies vaccine (Harris).

The Arlington Chemical Co, Yonkers, N. Y—License No 67:

Bacterial vaccines made from colon bacillus, micrococcus tetragenus, pneumococcus, staphylococcus albus, staphylococcus aureus. staphylococcus citreus, streptococcus, pollen extract; animal epidermal extract, animal food extract; vegetable food extract

Dermatological Research Laboratories, Philadelphia, Pa. (branch of Abbott Laboratories, Chicago, Ill.—License No 68.

Arsphenamine, neoarsphenamine; sulpharsphenamine

H. A. Metz Laboratories, 122 Hudson Street, New York City—License No. 69

Arsphenamine; neoarsphenamine; sodium arsphenamine, silver arsphenamine; neosilver arsphenamine, sulpharsphenamine.

Synthetic Drugs and Diarsenol Laboratories, Buffalo, N. Y.—License No. 70:

Arsphenamine; neoarsphenamine; sodium arsphenamine, sulpharsphenamine.

Hynson, Westcott & Dunning, Baltimore, Md—License No 76:

Suspension of arsphenamine; suspension of neoarsphenamine.

Mallinckrodt Chemical Works, St Louis, Mo.—License No 77:

Arsphenamine; neoarsphenamine

Agricultural Experiment Station, College of Agriculture, University of Illinois, Urbana, Ill.—License No. 81.

Botulinus antitoxin.

Powers-Weightman-Rosengarten Co., Philadelphia, Pa.—License No. 82:
Arsphenamine; neoarsphenamine; sulpharsphenamine; a compound of glucose with arsphenamine base.

Terrell Laboratories, 311 State Bank Building, Fort Worth, Tex.—License No. 84:
Rabies vaccine (killed virus)

Jensen-Salsbury Laboratories, Kansas City, Mo.—License No. 85:
Botulinus antitoxin; rabies vaccine (killed virus).

Cook Laboratories, 536 Lake Shore Drive, Chicago, Ill—License No. 86:
Bacterial vaccines made from acne bacillus, colon bacillus, Friedländer bacillus, gonococcus, influenza bacillus, micrococcus catarrhalis, paratyphoid bacillus A, paratyphoid bacillus B, pertussis bacillus, pneumococcus, staphylococcus albus, staphylococcus aureus, streptococcus, and typhoid bacillus; diphtheria toxin-antitoxin mixture

The Neosol Co, 72 Kingsley St., Buffalo, N. Y—License No 90.
Solution of neoarsphenamine, solution of sulpharsphenamine.

Hollister-Stier Laboratories, 312 Old National Bank Bldg., Spokane, Washington—License No. 91:
Pollen extract

DePree Laboratories, Holland, Michigan—License No 93
Arsphenamine, neoarsphenamine

The Jackson Infirmary, Jackson, Mississippi.—License No. 96.
Rabies vaccine (Pasteur).

FOREIGN ESTABLISHMENTS

Institut Pasteur de Paris, Paris, France.—License No. 11. Selling agents for the United States: Pasteur Laboratories of America, 366 West Eleventh Street, New York City:
Diphtheria antitoxin; tetanus antitoxin, antianthrax serum; antidysenteric serum; antiplague serum; antistreptococcic serum, bacterial vaccines made from cholera vibrio, plague bacillus, staphylococcus albus, and staphylococcus aureus.

Farbwerke Hoechst, vorm. Meister Lucius und Bruning, Hoechst am Main, Germany.—License No 24. Selling agents for the United States: H A Metz Laboratories, 122 Hudson St, New York City:
Diphtheria antitoxin, tetanus antitoxin, antistreptococcic serum; normal horse serum, tuberculin old; tuberculin T. R.; tuberculin B. E.; tuberculin B F.; bacterial vaccines made from cholera vibrio, gonococcus, staphylococcus albus, staphylococcus aureus, and staphylococcus citreus, typhoid bacillus; sensitized bacterial vaccine made from typhoid bacillus; arsphenamine; neoarsphenamine; sodium arsphenamine, silver arsphenamine, neosilverarsphenamine, sulphoxylarsphenamine.

E Merck, Darmstadt, Germany—License No 31:
Tuberculin Ointment (Moro). Selling agents for the United States: Merck & Co., 45-47 Park Place, New York City.

Connaught Antitoxin Laboratory, University of Toronto, Canada.—License No. 73.
Diphtheria antitoxin, tetanus antitoxin.

Les Etablissements Poulenc Freres, 92 Rue-Vieille-du-Temple, Paris, III, France.—License No. 74. Selling agents for the United States: Geo. J. Wallau, 6 Cliff St., New York City.
Bacterial vaccines made from gonococcus, micrococcus tetragenus, pertussis bacillus, staphylococcus albus, staphylococcus aureus, and synococcus.

Laboratoire de Biochimie Medicale, 92 Rue Michel-Ange, Paris, France.—License No. 83:
Sulpharsphenamine Selling agents for the United States. Anglo-French Drug Co., 1270 Broadway, New York City. Selling agents for Porto Rico: Chas Vere, Box 216, San Juan, P. R

Istituto Sieroterapico Milanese, Milan, Italy.—License No. 87.
Antianthrax serum, bacterial vaccines made from gonococcus, pneumococcus, staphylococcus albus, staphylococcus aureus, staphylococcus citreus, and streptococcus; neoarsphenamine Selling agents for the United States. Neother Products Co, 50 Union Square, New York City.

Boots Pure Drug Co, Ltd., Nottingham, England.—License No. 92:
Arsphenamine Diglucoside Selling agents for the United States. The United Drug Co, 43 Leon Street, Boston, Massachusetts.

Etablissements Mouneyrat, Villaneuve-la-Garenne, Seine, France.—License No. 94:
Phospharsphenamine Selling agents for the United States. G. J. Wallau, 6 Cliff Street, New York City.

Institut National de Vaccinotherapie, 26 Rue Pages, Suresnes (Seine) near Paris, France.—License No. 95:
Bacterial vaccines made from colon bacillus, enterococcus, Friedländer bacillus, micrococcus catarrhalis, micrococcus tetragenus, pneumococcus, staphylococcus albus, staphylococcus aureus, and streptococcus.

Behringswerke, A. G, Marburg-am-Lahn, Germany.—License No. 97:
Bacterial vaccines made from gonococcus, staphylococcus albus, and staphylococcus aureus.

DIGEST OF CURRENT PUBLIC HEALTH COURT DECISION

Tort action for damages for illness caused by eating restaurant food containing dead mouse.—(New Hampshire Supreme Court.) The plaintiff, a woman, while a customer in defendants' restaurant, was made ill by eating some food containing a dead mouse. The finding of the mouse in her food made her sick immediately and a nervous shock resulted. The trial in the lower court resulted in a verdict for the plaintiff. The supreme court set aside the verdict, making a retrial necessary, on the ground that certain evidence given on behalf of the plaintiff at the trial should have been excluded. The supreme court, however, decided some interesting points, and the following is taken from the court's opinion:

> * * * there was a duty [on defendants' part] to anticipate [the presence of the mouse in the food] if ordinary men in the defendants' place would have foreseen the danger in acting for their customers' safety. Whether they would or not is a question of fact to be determined affirmatively only if there is evidence tending to show it. As a form of expression of due care, anticipation is a precautionary consideration of what may happen in a situation for which the party is under responsibility. * * * If there is some general probability of danger, the duty to anticipate it and give it attention arises according to the circumstances. Anticipation is not confined to expectation. * * * The infrequency of the danger or even the lack of its previous occurrence in the experience of the party charged is not a decisive test. * * * [In this case] a jury might properly find the defendants should have anticipated the danger and thereupon maintained a reasonable inspection so the mouse would have been discovered.
>
> * * * It was as much the duty to use care before as well as after customers entered the restaurant in the preparation of their food, since they were entitled to have food so prepared.
>
> * * * Lack of external force does not warrant a bar to recovery, when immediate physical injury in some form is present. * * * Immediate physical injury as the result of negligence being shown, whether or not induced by some form of fright, there may be recovery for subsequent mental or nervous trouble with its attendant bodily effects, whether or not produced by fright in a narrow sense or in a broad one to include emotions of disgust and shame, if negligence is proved as its cause. * * *

The court held as correct an instruction to the jury that the defendants, if liable, were liable "for the actual effects of this occurrence upon this particular woman, and if the plaintiff was unduly susceptible to fright from mice, the only effect of that is to make the damages all the greater."

The court further held that a restaurant keeper was not an insurer of the fitness of the food served to his customers, but that his obligation was to use due care.

Regarding the refusal of the trial court to submit as an issue contributory negligence on the plaintiff's part, the court stated as follows:

> The record discloses no evidence from which it can be found the plaintiff was thus negligent. It being common knowledge that customers at a restaurant

expect the food to be fit to eat without first inspecting it, there is no evidence tending to show that the plaintiff on the occasion of her visit had anything called to her notice which would have induced an ordinary person in her place to inspect her food in such a way that the mouse would have been discovered before she partook of the dressing containing it. The defendants have pointed out no evidence tending to show the plaintiff was put on her guard and called upon to suspect and then inspect her food to see if it was fit to eat. (Kenney *v.* Wong Len et al., 128 Atl. 343.)

DEATHS DURING WEEK ENDED MAY 16, 1925

Summary of information received by telegraph from industrial insurance companies for week ended April 25, 1925, and corresponding week of 1924. (From the Weekly Health Index, April 28, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 16, 1925	Corresponding week, 1924
Policies in force	59, 539, 040	56, 020, 487
Number of death claims	11, 434	11, 221
Death claims per 1,000 policies in force, annual rate	10. 0	10. 4

Deaths from all causes in certain large cities of the United States during the week ended May 16, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, May 19, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended May 16, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate week ended May 16, 1925 [2]
	Total deaths	Death rate [1]		Week ended May 16, 1925	Corresponding week, 1924	
Total (61 cities)	6,796	13.2	[3] 12.9	894	[3] 790	
Akron	34			5	9	55
Albany [4]	32	13.9	16.7	4	3	89
Atlanta	83	18.6	16.3	12	6	
Baltimore [4]	237	15.5	16.1	26	24	76
Birmingham	76	19.3	17.1	15	9	
Boston	216	14.4	16.0	38	29	101
Bridgeport	28			2	0	32
Buffalo	143	13.5	13.8	20	19	81
Cambridge	28	13.0	14.4	3	5	52
Chicago [4]	642	11.2	11.7	86	88	76
Cincinnati	122	15.5	14.8	13	18	77
Cleveland	190	10.6	11.7	19	35	47
Columbus	88	16.8	11.1	4	7	38
Dallas	40	10.8	13.6	7	11	
Dayton	37	11.2	9.9	2	2	32
Denver	81			6	6	
Des Moines	29	10.1	9.3	6	2	103
Detroit	247			43	49	73
Duluth	17	8.0	12.5	7	6	148
Erie	22			2	8	39
Fall River [4]	30	12.9	13.4	6	7	86
Flint	30			9	2	148
Fort Worth	32	10.9	6.7	1	3	
Grand Rapids	35	12.1	9.8	3	3	47
Houston	55			8	5	
Indianapolis	84	12.2	13.2	9	8	62
Jacksonville, Fla	54	26.8	14.8	7	3	156
Jersey City	69	11.4	14.4	7	16	49

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 60 cities.
[4] Deaths for week ended Friday, May 15, 1925.

Deaths from all causes in certain large cities of the United States during the week ended May 16, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, May 19, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended May 16, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate week ended May 16, 1925
	Total deaths	Death rate		Week ended May 16, 1925	Corresponding week, 1924	
Kansas City, Kans	31	13.1	10.3	3	1	63
Kansas City, Mo	80	11.4	9.6	6	6	----------
Los Angeles	214	----------	----------	28	30	78
Louisville	76	15.3	14.5	6	5	52
Lowell	20	9.0	12.6	4	3	70
Lynn	30	14.9	12.1	4	0	106
Memphis	56	16.7	14.8	8	0	----------
Milwaukee	128	13.3	9.3	17	9	78
Minneapolis	110	13.5	16.2	11	15	59
Nashville [4]	46	19.3	21.5	4	2	----------
New Bedford	33	12.7	10.6	8	5	133
New Haven	42	12.2	11.0	6	8	78
New Orleans	146	18.4	16.8	19	19	----------
New York	1,520	13.0	12.3	169	178	67
Bronx Borough	191	11.0	9.9	22	18	76
Brooklyn Borough	489	11.4	11.4	62	70	65
Manhattan Borough	673	15.5	15.0	73	75	73
Queens Borough	123	11.2	7.5	11	12	55
Richmond Borough	44	17.1	16.4	1	3	18
Newark, N. J	121	13.9	13.7	18	17	82
Norfolk	27	8.3	10.2	2	7	36
Oakland	44	9.0	9.3	3	3	35
Oklahoma City	23	----------	----------	3	3	----------
Omaha	59	14.5	14.8	7	6	67
Paterson	29	10.7	10.4	4	3	67
Philadelphia	536	14.1	12.6	58	42	73
Pittsburgh	174	14.4	17.4	11	30	39
Portland, Oreg.	58	10.7	9.4	5	4	52
Providence	79	16.8	15.4	10	15	80
Richmond	53	14.8	14.2	7	5	85
St. Louis	212	13.5	11.9	11	10	----------
St. Paul	56	11.9	12.6	5	10	43
Salt Lake City [4]	32	12.7	17.8	1	4	16
San Francisco	149	13.9	14.6	12	9	69
Schenectady	18	9.2	11.9	2	2	56
Seattle	65	----------	----------	3	1	31
Somerville	26	13.3	11.9	3	5	80
Spokane	26	----------	----------	2	4	44
Springfield, Mass	30	10.3	13.7	3	7	45
Syracuse	46	12.5	13.0	6	7	75
Tacoma	24	12.0	9.6	5	3	119
Toledo	74	13.4	11.3	9	7	81
Trenton	36	14.2	17.3	5	7	81
Utica	33	16.1	----------	3	----------	62
Washington, D. C	125	13.1	14.6	18	26	101
Waterbury	18	----------	----------	4	5	88
Wilmington, Del	28	12.0	12.2	6	2	137
Worcester	65	17.0	13.3	7	0	81
Yonkers	30	14.0	10.0	8	2	176
Youngstown	30	9.8	13.1	5	2	63

[4] Deaths for week ended Friday, May 15, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended May 23, 1925

ARIZONA	Cases
Chicken pox	3
Diphtheria	1
Influenza	24
Measles	233
Mumps	113
Scarlet fever	2
Trachoma	1
Tuberculosis	54
Typhoid fever	3
Whooping cough	6
ARKANSAS	
Chicken pox	9
Diphtheria	3
Hookworm disease	2
Influenza	53
Malaria	112
Measles	44
Mumps	19
Paratyphoid fever	1
Pellagra	26
Scarlet fever	3
Smallpox	1
Trachoma	1
Tuberculosis	17
Typhoid fever	11
Whooping cough	21
COLORADO (Exclusive of Denver)	
Chicken pox	10
Diphtheria	34
Influenza	3
Measles	9
Mumps	23
Pneumonia	2
Scarlet fever	27
Smallpox	2
Trachoma	1
Tuberculosis	35
Typhoid fever	1
Whooping cough	11

CONNECTICUT	Cases
Chicken pox	50
Diphtheria	27
German measles	35
Influenza	3
Measles	293
Mumps	32
Paratyphoid fever	1
Pneumonia (all forms)	48
Poliomyelitis	1
Scarlet fever	70
Septic sore throat	1
Tetanus	1
Tuberculosis (all forms)	29
Typhoid fever	6
Typhus fever	1
Whooping cough	90
DELAWARE	
Chicken pox	1
Diphtheria	3
Measles	13
Mumps	1
Pneumonia	2
Scarlet fever	1
Tuberculosis	10
Whooping cough	1
FLORIDA	
Chicken pox	21
Diphtheria	8
Malaria	4
Measles	1
Mumps	65
Poliomyelitis	1
Scarlet fever	3
Smallpox	5
Tetanus	1
Tuberculosis	29
Typhoid fever	20
Whooping cough	24

ILLINOIS

	Cases
Cerebrospinal meningitis—Bureau County	1
Diphtheria:	
Cook County	57
Scattering	25
Influenza	21
Measles	1,402
Pneumonia	232
Poliomyelitis—Adams County	1
Scarlet fever:	
Cook County	256
Christian County	14
Kane County	14
St Clair County	19
Stephenson County	19
Scattering	85
Smallpox	39
Tuberculosis	295
Typhoid fever	16
Whooping cough	261

IOWA

Diphtheria	26
Scarlet fever	49
Smallpox	21

KANSAS

Chicken pox	84
Diphtheria	19
German measles	1
Influenza	11
Measles	26
Mumps	154
Pellagra	2
Pneumonia	39
Scarlet fever	66
Smallpox	1
Tuberculosis	30
Typhoid fever	3
Whooping cough	76

LOUISIANA

Diphtheria	6
Influenza	33
Leprosy	1
Malaria	12
Pneumonia	55
Scarlet fever	12
Smallpox	12
Tuberculosis	92
Typhoid fever	55
Whooping cough	20

MAINE

Chicken pox	18
Diphtheria	3
Influenza	45
Measles	5
Mumps	86
Pneumonia	26
Poliomyelitis	1
Scarlet fever	15
Tuberculosis	9
Vincent's angina	1
Whooping cough	1

[1] Week ended Friday.

MARYLAND [1]

	Cases
Cerebrospinal meningitis	2
Chicken pox	104
Diphtheria	36
German measles	4
Influenza	31
Lethargic encephalitis	1
Malaria	1
Measles	30
Mumps	70
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pneumonia (all forms)	75
Poliomyelitis	1
Scarlet fever	54
Septic sore throat	1
Tetanus	1
Tuberculosis	73
Typhoid fever	9
Whooping cough	138

MASSACHUSETTS

Cerebrospinal meningitis	1
Chicken pox	134
Conjunctivitis (suppurative)	6
Diphtheria	92
Dysentery	1
German measles	307
Hookworm disease	1
Influenza	7
Lethargic encephalitis	1
Measles	834
Mumps	66
Ophthalmia neonatorum	24
Pneumonia (lobar)	100
Scarlet fever	208
Septic sore throat	1
Tetanus	1
Tuberculosis (all forms)	156
Typhoid fever	12
Whooping cough	168

MICHIGAN

Diphtheria	48
Measles	695
Pneumonia	144
Scarlet fever	302
Smallpox	46
Tuberculosis	97
Typhoid fever	7
Whooping cough	205

NEW JERSEY

Cerebrospinal meningitis	2
Chicken pox	180
Diphtheria	68
Influenza	4
Measles	532
Pneumonia	128
Scarlet fever	248
Smallpox	8
Typhoid fever	6
Whooping cough	271

NEW MEXICO	Cases
Diphtheria	4
German measles	1
Influenza	2
Malaria	1
Measles	4
Mumps	17
Pneumonia	8
Scarlet fever	7
Smallpox	2
Tuberculosis	17
Typhoid fever	1
Whooping cough	1
NEW YORK (Exclusive of New York City)	
Diphtheria	80
Influenza	31
Lethargic encephalitis	4
Measles	740
Pneumonia	236
Scarlet fever	324
Smallpox	8
Typhoid fever	15
Whooping cough	194
NORTH CAROLINA	
Cerebrospinal meningitis	2
Chicken pox	87
Diphtheria	15
Measles	37
Poliomyelitis	1
Scarlet fever	10
Smallpox	41
Typhoid fever	10
Whooping cough	101
OREGON	
Cerebrospinal meningitis	3
Chicken pox	17
Diphtheria	
Portland	17
Scattering	9
Influenza	30
Measles	2
Mumps	12
Pneumonia	[1] 11
Scarlet fever	12
Smallpox	2
Tuberculosis	16
Typhoid fever	1
Whooping cough	16
SOUTH DAKOTA	
Chicken pox	2
Diphtheria	2
Lethargic encephalitis	1
Measles	4
Pneumonia	1
Scarlet fever	30
Whooping cough	6
TEXAS	
Cerebrospinal meningitis	1
Chicken pox	59
Diphtheria	20
Dysentery	8
Influenza	42
Malta fever	1
Measles	40
Mumps	72
Pellagra	25

[1] Deaths.

TEXAS—continued	Cases
Poliomyelitis	1
Scarlet fever	12
Smallpox	36
Tularæmia	1
Tuberculosis	28
Typhoid fever	11
Whooping cough	30
VERMONT	
Chicken pox	10
Diphtheria	3
Measles	11
Mumps	18
Scarlet fever	15
Whooping cough	3
VIRGINIA	
Smallpox—Henry County	11
WASHINGTON	
Cerebrospinal meningitis	
Spokane	2
Tacoma	3
Diphtheria	11
Chicken pox	89
German measles	67
Measles	3
Mumps	46
Scarlet fever	14
Smallpox	37
Tuberculosis	1
Whooping cough	144
WEST VIRGINIA	
Cerebrospinal meningitis—Wheeling	1
Diphtheria	4
Scarlet fever	20
Smallpox	14
Typhoid fever	1
WISCONSIN	
Milwaukee:	
Chicken pox	53
Diphtheria	10
German measles	103
Lethargic encephalitis	1
Measles	261
Mumps	41
Pneumonia	28
Scarlet fever	13
Smallpox	46
Tuberculosis	13
Typhoid fever	1
Whooping cough	25
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	81
Diphtheria	40
German measles	170
Influenza	187
Measles	170
Mumps	99
Pneumonia	19
Scarlet fever	101
Smallpox	19
Trachoma	1
Tuberculosis	30
Typhoid fever	3
Whooping cough	75

Reports for Week Ended May 16, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	2
Chicken pox	34
Diphtheria	7
Dysentery	70
Influenza	47
Malaria	68
Measles	6
Mumps	35
Pellagra	36
Pneumonia	62
Scarlet fever	25
Smallpox	61
Tetanus	1
Tuberculosis	42
Typhoid fever	26
Whooping cough	33

CALIFORNIA

	Cases
Diphtheria	78
Influenza	32
Measles	85
Poliomyelitis:	
Alhambra	1
Los Angeles	1
Los Angeles County	1
Modesto	1
San Bernardino	1
San Francisco	3
Scarlet fever	135
Smallpox:	
Long Beach	16
Los Angeles	27
Los Angeles County	17
Oakland	8
Pasadena	8
Scattering	71
Typhoid fever	3

DISTRICT OF COLUMBIA

	Cases
Chicken pox	8
Diphtheria	9
Measles	30
Pneumonia	29
Scarlet fever	21
Smallpox	3
Tuberculosis	23
Typhoid fever	1
Whooping cough	19

GEORGIA

	Cases
Ancylostomiasis	10
Cerebrospinal meningitis	1
Chicken pox	69
Conjunctivitis (acute)	1
Diphtheria	6
Dysentery	88
Influenza	110
Malaria	56
Measles	15
Mumps	113
Pellagra	12
Pneumonia	82
Scarlet fever	6
Septic sore throat	8
Smallpox	24

GEORGIA—continued

	Cases
Tetanus	1
Trachoma	1
Tuberculosis	51
Typhoid fever	29
Whooping cough	55

INDIANA

	Cases
Chicken pox	47
Diphtheria	24
Influenza	43
Measles	93
Mumps	27
Pneumonia	5
Scarlet fever	
Delaware County	10
Elkhart County	9
Marion County	15
St Joseph County	16
Vigo County	8
Scattering	70
Smallpox	
Grant County	9
Marion County	8
Miami County	9
Scattering	31
Tuberculosis	43
Typhoid fever	8
Whooping cough	33

MINNESOTA

	Cases
Cerebrospinal meningitis	1
Chicken pox	88
Diphtheria	72
Influenza	3
Lethargic encephalitis	1
Measles	28
Pneumonia	6
Scarlet fever	281
Smallpox	23
Tuberculosis	68
Typhoid fever	3
Whooping cough	43

MISSISSIPPI

	Cases
Diphtheria	3
Scarlet fever	1
Smallpox	25
Typhoid fever	7

MISSOURI

(Exclusive of Kansas City)

	Cases
Cerebrospinal meningitis	1
Chicken pox	46
Diphtheria	60
Influenza	2
Measles	11
Mumps	22
Ophthalmia neonatorum	1
Scarlet fever	141
Smallpox	14
Trachoma	4
Tuberculosis	79
Typhoid fever	5
Whooping cough	26

NEBRASKA

	Cases
Chicken pox	28
Diphtheria	3
German measles	1
Measles	1
Mumps	4
Pneumonia	1
Scarlet fever	12
Smallpox	17
Tuberculosis	5
Whooping cough	17

NEW MEXICO

	Cases
Anthrax	1
Chicken pox	1
Conjunctivitis	2
Diphtheria	3
Influenza	1
Measles	13
Mumps	6
Pneumonia	7
Scarlet fever	6
Smallpox	2
Tuberculosis	51
Typhoid fever	1
Whooping cough	10

NEW YORK

(Exclusive of New York City)

	Cases
Cerebrospinal meningitis	2
Diphtheria	101
Influenza	41
Lethargic encephalitis	4
Measles	581
Pneumonia	280
Poliomyelitis	6
Scarlet fever	324
Smallpox	6
Typhoid fever	16
Whooping cough	217

NORTH DAKOTA

	Cases
Chicken pox	3
Diphtheria	8
German measles	3
Influenza	8
Measles	4
Mumps	4
Pneumonia	8
Poliomyelitis	1
Scarlet fever	39
Smallpox	2
Tuberculosis	2
Whooping cough	58

OKLAHOMA [1]

(Exclusive of Oklahoma City and Tulsa)

	Cases
Cerebrospinal meningitis—Le Flore County	1
Chicken pox	10
Diphtheria	9
Influenza	53
Measles	5
Mumps	9
Pneumonia	16
Scarlet fever	6
Smallpox	4
Typhoid fever	10
Whooping cough	16

WYOMING

	Cases
Cerebrospinal meningitis	1
Chicken pox	4
Diphtheria	3
Influenza	4
Measles	3
Mumps	1
Pneumonia	2
Rocky Mountain spotted fever	1
Scarlet fever	2
Septic sore throat	1

[1] Corrected report, week ended May 9, 1925—Whooping cough 20, mumps 20 (Pub. Health Rep., May 15, 1925, p. 1010.)

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
April, 1925										
Georgia		59	1,550	173	92	50	2	28	46	42
Idaho	0	15	0	0		0	1	13		11
Illinois	11	391	302	2	5,985	1	3	1,772	215	58
Louisiana	1	53	307	46	8	44	1	50	83	98
Maine	4	12	956	0	85	0	4	85		12
Maryland	2	132	241	3	154	0	2	280	6	22
Minnesota	4	259	20		77		2	928	73	12
New Jersey	8	310	92	0	1,322		4	1,172	23	24
Ohio	4	294	180	0	1,258	0	5	1,827	539	42
Oklahoma	5		1,036	112	21	26	1		77	29
Pennsylvania	3	957		5	7,289	1	3	2,534	63	69
Rhode Island	0	49	37	1	0	0	1	143	27	4
South Carolina		146	4,027	619	18	1		28	129	84
Vermont	0	17		0	23			68		3
West Virginia	2	51	264		481	2		170	96	40
Wisconsin	5	203	1,710		2,440			719	157	25

RECIPROCAL NOTIFICATIONS, APRIL, 1925

Notifications regarding communicable diseases sent during the month of April, 1925, to other State health departments by departments of health of certain States

Referred by—	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever
Connecticut					1		
Illinois					2	25	
Massachusetts							1
Minnesota						60	
New Jersey	1						
New York		1	1	1			6
New Mexico							1
Washington							1

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named:

Los Angeles, Calif.

Week ended May 9, 1925:
- Number of rats examined — 3,767
- Number of rats found to be plague infected — 0
- Number of squirrels examined — 1,482
- Number of squirrels found to be plague infected — 0

Totals, Nov. 5, 1924, to May 9, 1925:
- Number of rats examined — 99,170
- Number of rats found to be plague infected — 182
- Number of squirrels examined — 12,701
- Number of squirrels found to be plague infected — 9

Date of discovery of last plague-infected rodent, May 22, 1925.
Date of last human case, Jan. 15, 1925.

Oakland, Calif.

(Including other East Bay communities)

Week ended May 9, 1925:
- Number of rats trapped — 1,825
- Number of rats found to be plague infected — 0

Totals, Jan. 1 to May 9, 1925:
- Number of rats trapped — 43,980
- Number of rats found to be plague infected — 21

Date of discovery of last plague-infected rat, Mar. 4, 1925.
Date of last human case, Sept. 10, 1919.

New Orleans, La.

Week ended May 9, 1925:
- Number of vessels inspected — 357
- Number of inspections made — 1,088
- Number of vessels fumigated with cyanide gas — 25
- Number of rodents examined for plague — 5,288
- Number of rodents found to be plague infected — 0

Totals, Dec. 5, 1924, to May 9, 1925:
- Number of rodents examined for plague — 96,308
- Number of rodents found to be plague infected — 12

Date of discovery of last plague-infected rat, Jan. 17, 1925.
Date of last human case occurring in New Orleans, Aug. 20, 1920.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended May 9, 1925, 35 States reported 1,238 cases of diphtheria. For the week ended May 10, 1924, the same States reported 1,541 cases of this disease. One hundred and four cities, situated in all parts of the country and having an aggregate population of nearly 28,800,000, reported 867 cases of diphtheria for the week ended May 9, 1925. Last year, for the corresponding week, they reported 867. The estimated expectancy for these cities was 925 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty-two States reported 5,650 cases of measles for the week ended May 9, 1925, and 11,838 cases of this disease for the week ended May 10, 1924. One hundred and four cities reported 3,460 cases of measles for the week this year, and 4,357 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 35 States—this year, 3,412 cases; last year, 3,243; 104 cities—this year, 1,785; last year, 1,516; estimated expectancy, 982 cases.

Smallpox.—For the week ended May 9, 1925, 35 States reported 790 cases of smallpox. Last year, for the corresponding week, they reported 1,253 cases. One hundred and four cities reported smallpox for the week as follows: 1925, 257 cases; 1924, 432 cases; estimated expectancy, 95 cases. These cities reported 14 deaths from smallpox for the week this year.

Typhoid fever.—Two hundred and forty-two cases of typhoid fever were reported for the week ended May 9, 1925, by 34 States. For the corresponding week of 1924 the same States reported 245 cases. One hundred and four cities reported 75 cases of typhoid fever for the week this year, and 67 cases for the corresponding week last year. The estimated expectancy for these cities was 57 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 104 cities as follows: 1925, 896 deaths; 1924, 842 deaths.

City reports for week ended May 9, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine									
Portland	73,129	0	1	0	0	0	0	9	2
New Hampshire									
Concord	22,408	0	1	0	0	0	1	0	1
Manchester	81,383	0	2	0	0	0	10	0	1
Vermont									
Barre	[1] 10,008	1	0	0	0	0	0	5	0
Burlington	23,613	1	1	0	0	0	12	12	0
Massachusetts									
Boston	770,400	33	55	14	5	0	296	11	30
Fall River	120,912	11	3	0	0	0	1	2	7
Springfield	144,227	3	3	0	1	1	6	3	1
Worcester	191,927	7	4	4	2	0	5	0	7
Rhode Island									
Pawtucket	68,799	------	1	2	0	0	0	------	1
Providence	242,378	4	11	11	------	3	4	0	6
Connecticut									
Bridgeport	[1] 143,555	6	4	6	0	0	0	0	5
Hartford	[1] 138,036	0	6	6	2	0	3	5	3
New Haven	172,967	9	4	1	2	0	80	0	2
MIDDLE ATLANTIC									
New York									
Buffalo	536,718	10	11	9	3	0	321	2	19
New York	5,927,625	171	252	250	29	13	189	33	212
Rochester	317,867	5	5	26	------	2	63	11	12
Syracuse	184,511	4	7	1	------	1	9	15	8
New Jersey									
Camden	124,157	3	3	1	------	1	88	0	4
Newark	438,699	28	16	8	5	0	65	8	21
Trenton	127,390	1	4	1	1	0	5	0	6
Pennsylvania									
Philadelphia	1,922,788	72	66	107	2	0	372	25	57
Pittsburgh	613,442	34	18	13	------	3	345	4	26
Reading	110,917	13	3	3	0	0	117	9	0
Scranton	140,636	1	2	4	0	0	0	0	8
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	7	7	7	------	2	3	5	9
Cleveland	888,519	70	21	47	5	3	7	3	19
Columbus	261,082	2	3	0	------	3	1	9	6
Toledo	268,338	13	4	4	------	1	119	0	2
Indiana:									
Fort Wayne	93,573	6	2	0	0	0	13	0	2
Indianapolis	342,718	------	6	0	------	2	22	------	9
South Bend	76,709	3	1	2	0	0	1	0	2
Terre Haute	68,939	3	1	0	0	0	37	0	0
Illinois:									
Chicago	2,886,121	72	102	60	10	6	714	13	76
Cicero	55,968	7	3	0	0	0	10	0	0
Springfield	61,833	3	1	0	2	2	20	29	2

[1] Population Jan. 1, 1920.

City reports for week ended May 9, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST NORTH CENTRAL—continued									
Michigan:									
Detroit	995,668	56	49	17	3	3	21	12	28
Flint	117,968	4	3	4	0	0	16	0	2
Grand Rapids	145,947	13	3	2	0	0	88	1	3
Wisconsin:									
Madison	42,519	8	1	1	0	0	4	14	1
Milwaukee	484,595	42	12	10	1	0	241	82	15
Racine	64,393	10	1	2	0	0	3	4	1
Superior	[1] 39,671	2	1	0	0	0	0	0	1
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	2	2	0	0	0	1	0	1
Minneapolis	409,125	33	16	30		3	25	7	7
St. Paul	241,891	19	12	24		1	6	17	7
Iowa:									
Davenport	61,262	0	0	1	0		1	0	
Des Moines	140,923	0	3	4	0		0	0	
Sioux City	79,662	3	1	0	0		0	18	
Waterloo	39,667	7	1	0	0		0	0	
Missouri:									
Kansas City	351,819	4	7	2	1	1	6	11	12
St. Joseph	78,232	2	1	1	0	0	0	2	2
St. Louis	803,853	40	37	72	0	0	11	6	
North Dakota:									
Fargo	24,841	1	0	1	0	0	0	2	0
Grand Forks	14,547	0	1	0	0		1	0	
South Dakota:									
Aberdeen	15,829	0		0	0		1	0	
Sioux Falls	29,206	0	0	0	0	0	1	0	0
Nebraska:									
Lincoln	58,761	6	2	2		1	0	2	0
Omaha	204,382	6	4	1	0	0	1	3	4
Kansas:									
Topeka	52,555	16	1	0	0	0	1	57	1
Wichita	79,261	20	1	3	0	0	1	1	1
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	3	1	5	0	0	6	0	2
Maryland:									
Baltimore	773,580	103	20	11	18	4	12	51	31
Cumberland	32,361	0	1	0	1	0	0	0	0
Frederick	11,301	0	0	0	0	0	0	0	0
District of Columbia:									
Washington	[1] 437,571	15	10	26	2	2	39		12
Virginia:									
Lynchburg	30,277	5	0	0	0	0	1	10	0
Norfolk	159,089	24	0	0	0	0	1	22	0
Richmond	181,044	2	1	4	0	0	16	7	4
Roanoke	55,502	4	1	1	0	0	13	0	1
West Virginia:									
Charleston	45,597	0	1	3		1	15	2	1
Huntington	57,918	0	0	0	0		0	0	
Wheeling	[1] 56,208	4	1	0		1	7	0	3
North Carolina:									
Raleigh	29,171	8	0	0	0	0	0	0	0
Wilmington	35,719	0	1	0	0	0	1	3	2
Winston-Salem	56,230	9	1	0	0	0	7	15	1
South Carolina:									
Charleston	71,245	1	1	0	0	0	0	0	2
Columbia	39,688	2	0	0	0	0	0	0	0
Greenville	25,789	0	0	0	0	0	0	0	0
Georgia:									
Atlanta	222,963	4	1	1	16	1	0	0	13
Brunswick	15,937	0	0	0	0	0	0	1	0
Savannah	89,448	3	1	0	7	1	0	14	3
Florida:									
St. Petersburg	24,403	0	0	0	0	2	0	0	0
Tampa	56,050	0	0	0	0	0	0	0	2

[1] Population Jan. 1, 1920.

City reports for week ended May 9, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	1	1		1	0	0	5
Louisville	257,671	3	4	0	4	0	1	0	6
Tennessee:									
Memphis	170,067	4	3	0		2	10	1	8
Nashville	121,128	2	1	1		2	49	0	1
Alabama:									
Birmingham	195,901	5	1	0	6	3	0	0	8
Mobile	63,858	1	0	0		1	0	0	0
Montgomery	45,383	4	0	0	1	0	0	8	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	0	0	0	0		0	2	
Little Rock	70,916	0	0	0	0	0	5	1	1
Louisiana:									
New Orleans	404,575	4	7	6	4	1	0	0	11
Shreveport	54,590	4		0	0	0	0	0	4
Oklahoma:									
Oklahoma	101,150	1	1	0	0	0	1	1	2
Texas:									
Dallas	177,274		3	1	0	0	1		3
Galveston	46,877	1	1	0	0	0	0	0	1
Houston	154,970	2	3	1	0	0	0	0	3
San Antonio	184,727	0	1	6		2	1	0	4
MOUNTAIN									
Montana:									
Billings	16,927	0	1	0	0	0	0	7	2
Great Falls	27,787	2	1	1	0	0	12	0	1
Helena	[1] 12,037	0	0	0	0	0	0	0	0
Missoula	[1] 12,668	0	0	1	0	0	1	0	0
Idaho:									
Boise	22,806	3	0	0	0	0	0	1	0
Colorado:									
Denver	272,031	10	11	0		2	5	67	5
Pueblo	43,519	0	1	2	0	0	0	1	2
New Mexico:									
Albuquerque	16,648	0	1	0	0	0	2	4	0
Utah:									
Salt Lake City	126,241	13	3	7	0	0	1	26	2
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	1
PACIFIC									
Washington:									
Seattle	[1] 315,685	40	5	5	0		0	71	
Spokane	104,573		2						
Tacoma	101,731	3	1	0	0	0	0	4	1
Oregon:									
Portland	273,621	4	4	16	3	0	2	9	11
California:									
Los Angeles	666,853	39	33	23	14	2	23	12	16
Sacramento	69,950	0	1	2	0	1	0	0	0
San Francisco	539,038	43	23	10	4	1	8	37	13

[1] Population Jan. 1, 1920.

City reports for week ended May 9, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine											
Portland	1	1	0	0	0	2	0	0	0	2	22
New Hampshire.											
Concord	1	0	0	0	0	0	0	0	0	0	7
Manchester	2	9	0	0	0	0	0	0	0	-------	19
Vermont											
Barre	1	0	0	0	0	0	0	0	0	0	4
Burlington	0	0	0	0	0	0	0	0	0	0	8
Massachusetts											
Boston	51	78	0	0	0	18	2	2	0	31	224
Fall River	4	15	0	0	0	3	1	0	0	4	32
Springfield	6	19	0	0	0	1	0	0	0	12	31
Worcester	7	8	0	0	0	6	0	0	0	1	56
Rhode Island											
Pawtucket	2	1	0	0	0	1	0	0	0	-------	17
Providence	10	14	0	1	0	1	0	0	0	0	67
Connecticut											
Bridgeport	5	13	0	0	0	1	1	0	0	2	23
Hartford	4	6	0	0	0	0	0	0	0	6	29
New Haven	6	12	0	0	0	1	0	0	0	38	36
MIDDLE ATLANTIC											
New York											
Buffalo	18	23	0	0	0	11	0	1	0	21	151
New York	211	280	0	0	0	[1] 120	12	18	1	120	1,486
Rochester	13	30	0	0	0	4	0	0	0	5	83
Syracuse	12	5	0	0	0	0	1	0	0	6	59
New Jersey											
Camden	2	17	0	2	4	0	1	0	0	1	34
Newark	21	24	0	0	0	6	0	0	0	51	112
Trenton	3	1	0	0	0	3	0	0	0	-------	49
Pennsylvania											
Philadelphia	70	143	0	10	2	60	4	3	0	69	571
Pittsburgh	22	94	0	0	0	10	1	2	0	9	174
Reading	3	14	0	0	0	0	0	1	0	1	32
Scranton	2	2	0	0	0	1	1	0	0	6	-------
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	12	16	2	4	0	15	1	3	0	7	114
Cleveland	21	32	1	0	0	19	2	1	0	39	187
Columbus	6	17	2	6	0	5	0	1	0	2	85
Toledo	15	16	3	0	0	9	1	0	0	30	68
Indiana											
Fort Wayne	2	6	2	1	0	2	1	0	0	1	21
Indianapolis	16	9	6	11	0	6	0	0	0	-------	83
South Bend	3	13	1	2	0	0	0	0	0	2	14
Terre Haute	2	4	1	1	0	1	0	0	0	0	16
Illinois											
Chicago	72	198	2	2	0	52	3	3	1	97	706
Cicero	1	4	0	0	0	2	0	0	0	0	-------
Springfield	2	6	0	0	0	0	0	0	0	1	25
Michigan											
Detroit	75	110	7	0	0	17	3	3	0	90	258
Flint	6	4	2	2	0	0	1	0	0	5	19
Grand Rapids	7	35	1	0	0	2	1	1	0	4	34
Wisconsin											
Madison	2	7	0	0	0	0	0	0	0	9	5
Milwaukee	29	21	1	31	3	6	0	0	0	22	91
Racine	5	1	1	0	0	1	0	0	0	4	15
Superior	2	11	2	0	0	0	0	0	0	0	6
WEST NORTH CENTRAL											
Minnesota:											
Duluth	3	14	1	1	0	0	0	0	0	0	11
Minneapolis	27	94	7	6	2	4	1	0	0	3	94
St. Paul	17	37	5	1	0	4	0	1	0	17	52

[1] Pulmonary tuberculosis only.

City reports for week ended May 9, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL—continued											
Iowa:											
Davenport	2	1	5	1			1	0		0	
Des Moines	11	7	3	3			0	0		0	
Sioux City	3	2	1	4			0	0		0	
Waterloo	2	0	0	0			0	0		1	
Missouri:											
Kansas City	9	59	3	0	0	6	0	0	0	6	103
St. Joseph	2	2	1	0	0	1	0	0	0	0	31
St. Louis	31	79	2	2	0	15	1	0	0	15	205
North Dakota:											
Fargo	1	4	1	0	0	0	0	0	0	5	5
Grand Forks	1	0	0	0			0	0		0	
South Dakota:											
Aberdeen		3		0				0		0	
Sioux Falls	1	1	1	0	0	0	0	0	0	0	10
Nebraska:											
Lincoln	2	1	1	0	0	1	0	0	0	17	18
Omaha	4	3	2	15	0	3	0	0	0	2	34
Kansas:											
Topeka	2	2	1	0	0	1	0	0	0	1	12
Wichita	3	1	3	0	0	1	0	0	0	15	25
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	5	0	0	0	1	1	0	0	0	29
Maryland:											
Baltimore	26	21	0	3	0	29	2	0	0	96	253
Cumberland	0	0	0	0	0	0	0	0	0	0	7
Frederick	2	0	0	0	0	0	0	0	0	0	2
District of Columbia:											
Washington	18	21	1	1	1	0	1	2	0	9	125
Virginia:											
Lynchburg	1	0	0	0	0	0	0	2	0	13	9
Norfolk	1	0	0	0	0	1	0	0	0	7	
Richmond	2	1	0	1	0	2	0	3	0	0	40
Roanoke	1	0	1	0	0	3	0	0	0		11
West Virginia:											
Charleston	1	0	0	0	0	0	0	0	0	1	15
Huntington	1	0	0	2			0	0		0	
Wheeling	2	1	0	0	0	0	1	1	2	0	21
North Carolina:											
Raleigh	0	0	0	2	0	1	0	0	0	0	12
Wilmington	1	0	0	3	0	1	0	0	0	3	8
Winston-Salem	1	1	3	8	0	4	0	0	0	3	18
South Carolina:											
Charleston	0	0	0	0	0	2	0	4	0	0	36
Columbia	1	0	0	1	0	0	1	0	0	0	
Greenville	0	0	0	3	0	0	0	0	0	6	2
Georgia:											
Atlanta	3	2	5	0	0	3	0	1	0	11	75
Brunswick	0	0	0	0	0	0	1	0	0	0	5
Savannah	1	0	1	0	0	4	1	0	0	3	26
Florida:											
St. Petersburg	1	0	1	0	1	0	0	0	1	0	13
Tampa	0	0	0	0	0	4	1	1	0		21
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	0	1	0	0	1	1	0	0	0	20
Louisville	3	10	1	1	0	5	1	1	0	9	78
Tennessee:											
Memphis	4	3	1	6	0	5	1	2	0	12	57
Nashville	1	9	0	5	0	3	0	2	1	0	36
Alabama:											
Birmingham	1	23	0	54	0	5	1	0	0	13	56
Mobile	0	0	1	0	0	0	0	1	1	0	13
Montgomery	0	1	0	0	0	0	0	2	0	3	12

City repo ts for week ended May 9, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL											
Arkansas											
Fort Smith	0	0	0	0			0	0		7	
Little Rock	1	0	0	0	0	1	1	1	0	0	
Louisiana:											
New Orleans	3	14	3	0	0	22	3	3	0	13	142
Shreveport		0		0	0	4		1	0	0	27
Oklahoma:											
Oklahoma	2	1	4	0	0	0	0	0	1	3	17
Texas:											
Dallas	2	4	3	2	0	2	0	3	2		53
Galveston	0	0	0	1	0	2	0	1	0	0	10
Houston	1	0	0	3	0	4	0	0	0	0	64
San Antonio	0	1	0	0	0	10	0	1	0	0	67
MOUNTAIN											
Montana:											
Billings	1	7	1	0	0	0	0	0	0	0	4
Great Falls	1	12	2	3	0	2	0	0	0	0	8
Helena	1	0	0	1	0	0	0	0	0	0	2
Missoula	0	2	1	0	0	0	0	0	0	0	5
Idaho:											
Boise	1	3	1	0	0	0	0	0	0	0	7
Colorado											
Denver	11	4	2	0	0	15	0	0	0	7	77
Pueblo	1	1	0	0	0	0	0	0	0	1	10
New Mexico											
Albuquerque	1	0	0	0	0	4	0	0	0	0	8
Utah											
Salt Lake City	2	0	0	0	0	0	0	0	0	7	27
Nevada											
Reno	0	0	1	1	0	0	0	0	0	0	6
PACIFIC											
Washington											
Seattle	8	9	2	17			0	2		102	
Spokane	4		7				1				
Tacoma	2	0	1	9	0	1	0	0	0	12	19
Oregon.											
Portland	8	10	4	3	0	6	1	0	0	15	
California.											
Los Angeles	13	20	1	27	0	16	2	1	1	66	223
Sacramento	1	0	0	1	0	4	0	0	0	0	22
San Francisco	15	11	2	3	1	20	1	0	0	63	140

Division, State, and city	Cerebrospinal meningitis: Cases	Cerebrospinal meningitis: Deaths	Lethargic encephalitis: Cases	Lethargic encephalitis: Deaths	Pellagra: Cases	Pellagra: Deaths	Poliomyelitis (infantile paralysis): Cases, estimated expectancy	Poliomyelitis (infantile paralysis): Cases	Poliomyelitis (infantile paralysis): Deaths
NEW ENGLAND									
Massachusetts:									
Boston	2	1	4	2	0	0	0	1	0
Fall River	1	1	0	1	0	0	0	0	0
Rhode Island									
Providence	1	1		0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
Buffalo	1	0	0	0	0	0	0	0	0
New York	5	3	5	3	0	0	1	3	2
Pennsylvania									
Philadelphia	1	0	2	1	0	0	0	1	1

City reports for week ended May 9, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	1	1	1	1	0	0	0	0	0
Illinois:									
Chicago	3	3	0	0	0	0	1	0	0
Michigan:									
Detroit	1	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Missouri:									
Kansas City	0	0	1	1	0	0	0	0	0
St. Louis	0	0	1	0	0	0	1	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	0	0	1	0	0	0	0	0
North Carolina:									
Raleigh	0	0	0	0	0	1	0	0	0
Winston-Salem	1	1	1	1	0	0	0	0	0
Georgia:									
Savannah	0	0	0	0	1	1	0	0	0
Florida:									
St. Petersburg	0	1	0	0	0	0	0	0	0
EAST SOUTH CENTRAL									
Alabama:									
Birmingham	0	0	0	0	0	1	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock	0	0	0	0	1	0	0	0	0
Louisiana:									
New Orleans	0	0	0	0	2	0	0	0	0
Shreveport	0	0	0	0	0	1	--------	0	0
Texas:									
Dallas	0	0	0	0	0	1	0	0	0
Houston	0	0	0	0	0	3	0	0	0
San Antonio	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Colorado:									
Denver	0	0	0	0	0	1	0	0	0
Utah:									
Salt Lake City	0	0	0	0	0	0	0	0	1
PACIFIC									
Washington:									
Tacoma	1	0	0	0	0	0	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended May 9, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000, and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities in-

cluded in each group and the aggregate populations are shown in a separate table below:

Summary of weekly reports from cities, February 29 to May 9, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9
105 cities	162	167	167	[2] 168	177	158	160	[3] 162	[4] 158	[2] 157
New England	233	176	147	110	171	166	129	144	127	109
Middle Atlantic	167	214	196	231	241	220	228	218	213	212
East North Central	114	128	134	112	93	96	110	113	110	113
West North Central	282	201	199	247	220	226	168	187	201	278
South Atlantic	104	91	136	95	81	73	102	108	104	104
East South Central	63	40	69	57	23	34	46	40	40	11
West South Central	144	158	97	121	83	107	74	79	70	65
Mountain	86	105	143	134	124	105	239	[3] 285	[4] 118	105
Pacific	235	197	249	[2] 179	374	171	168	165	206	[2] 123

MEASLES CASE RATES

	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9
105 cities	418	449	506	[2] 507	558	531	589	[3] 646	[4] 582	[2] 627
New England	656	542	725	755	957	1,011	917	1,217	1,004	984
Middle Atlantic	428	518	598	633	734	680	815	782	734	797
East North Central	789	740	775	798	736	710	742	901	761	890
West North Central	68	75	93	89	77	58	91	102	79	112
South Atlantic	100	146	189	136	209	207	256	295	305	240
East South Central	86	11	69	34	69	34	97	189	200	343
West South Central	23	88	42	9	88	51	65	37	28	32
Mountain	29	763	573	38	219	57	267	[3] 224	[4] 551	181
Pacific	107	110	189	[2] 151	209	241	154	203	162	[2] 95

SCARLET FEVER CASE RATES

	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9
105 cities	395	432	427	[2] 419	409	367	342	[3] 361	[4] 309	[2] 323
New England	584	534	544	604	534	529	370	407	430	415
Middle Atlantic	372	439	417	405	436	359	343	336	323	319
East North Central	433	497	498	483	442	422	403	433	324	366
West North Central	775	719	792	755	736	647	651	692	518	618
South Atlantic	171	219	146	167	175	152	167	175	132	106
East South Central	194	355	286	286	263	280	229	257	263	263
West South Central	185	107	134	102	51	88	60	121	111	88
Mountain	286	200	429	248	277	258	315	[3] 428	[4] 335	277
Pacific	218	229	218	[2] 222	191	174	145	148	125	[2] 151

SMALLPOX CASE RATES

	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9
105 cities	62	61	63	[2] 58	57	51	48	[3] 62	[4] 50	[2] 46
New England	0	0	0	0	12	2	0	2	0	2
Middle Atlantic	1	5	8	7	21	10	18	12	8	6
East North Central	42	39	32	33	24	22	27	39	30	44
West North Central	114	124	102	135	87	97	85	89	75	60
South Atlantic	51	59	57	67	49	43	53	79	63	45
East South Central	652	446	646	423	42	572	395	457	435	377
West South Central	74	74	107	107	46	51	14	42	32	28
Mountain	48	95	67	19	19	19	10	[3] 31	[4] 10	48
Pacific	206	247	212	[2] 191	255	148	162	264	206	[2] 176

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Spokane, Wash., not included. Report not received at time of going to press.
[3] Helena, Mont., and Boise, Idaho, not included.
[4] Billings, Mont., not included.

Summary of weekly reports from cities, February 29 to May 9, 1925—Annual rates per 100,000 population—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9
105 cities	11	10	12	[2] 11	9	10	12	[3] 16	[4] 18	[2] 14
New England	7	5	30	12	5	2	7	17	10	5
Middle Atlantic	10	5	8	7	4	9	11	14	22	13
East North Central	11	4	7	3	4	6	4	7	4	9
West North Central	6	10	8	6	2	2	2	6	12	2
South Atlantic	8	24	22	12	30	20	12	14	28	28
East South Central	34	34	46	57	17	17	34	80	46	46
West South Central	28	28	23	42	32	37	56	51	51	46
Mountain	10	19	0	0	0	19	38	[3] 31	[4] 0	0
Pacific	15	15	0	[2] 28	20	9	12	23	17	[2] 9

INFLUENZA DEATH RATES

	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9
105 cities	30	34	42	33	34	27	27	[3] 30	[4] 22	15
New England	17	35	30	30	35	32	27	30	20	10
Middle Atlantic	15	24	29	22	21	16	24	17	14	10
East North Central	27	33	49	40	38	27	24	33	23	16
West North Central	35	33	42	46	39	37	50	48	31	11
South Atlantic	53	33	53	12	28	26	12	43	26	24
East South Central	103	91	120	86	69	74	80	86	51	51
West South Central	143	107	76	86	36	46	36	25	31	15
Mountain	19	48	48	38	181	86	38	[3] 82	[4] 49	19
Pacific	29	16	12	53	29	12	29	12	12	16

PNEUMONIA DEATH RATES

	Mar. 7	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9
105 cities	205	222	217	206	204	201	192	[3] 204	[4] 167	151
New England	226	229	211	219	251	211	206	186	149	161
Middle Atlantic	210	214	217	199	215	190	204	223	206	185
East North Central	195	241	222	214	182	190	190	211	148	130
West North Central	140	175	173	166	193	228	171	136	72	77
South Atlantic	268	246	290	252	234	238	232	191	195	156
East South Atlantic	260	366	286	269	269	343	206	286	194	160
West South Central	229	178	178	168	168	108	173	158	127	138
Mountain	162	210	172	200	162	267	210	[3] 234	[4] 128	124
Pacific	139	155	131	159	159	119	98	147	127	123

[2] Spokane, Wash., not included. Report not received at time of going to press.
[3] Helena, Mont., and Boise, Idaho, not included.
[4] Billings, Mont., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28, 898, 350	28, 140, 934
New England	12	12	2, 098, 746	2, 098, 746
Middle Atlantic	10	10	10, 304, 114	10, 304, 114
East North Central	17	17	7, 032, 535	7, 032, 535
West North Central	14	11	2, 515, 330	2, 381, 454
South Atlantic	22	22	2, 566, 901	2, 566, 901
East South Central	7	7	911, 885	911, 885
West South Central	8	6	1, 124, 564	1, 023, 018
Mountain	9	9	546, 445	546, 445
Pacific	6	3	1, 797, 830	1, 275, 841

FOREIGN AND INSULAR

ALGERIA

Typhus fever—Department of Algiers—April 30, 1925.—Under date of April 30, 1925, the occurrence of 27 cases of typhus fever in villages in the department of Algiers was reported. Of these, 24 cases occurred in the native population and 3 cases among Europeans. During the week ended April 20, 1925, a fatal case of typhus fever was reported at Algiers.

CHINA

Smallpox—Chungking.—Under date of April 18, 1925, smallpox was stated to be widespread at Chungking, China, but with less extension than in the year 1924.

HAWAII

Plague-infected rodents—April 28-30, 1925.—Under date of May 8, 1925, two plague-infected rodents were reported taken in the Island of Hawaii, on April 28 and 30, respectively. The rodents were trapped in practically the same locality in the vicinity of the Pacific Sugar Co. stables.

MADAGASCAR

Plague—March 1-15, 1925.—During the period March 1 to 15, 1925, 99 cases of plague with 92 deaths were reported in the Province and town of Tananarive, Madagascar. Of these, 64 cases were stated to have been bubonic, 13 pneumonic, and 22 septicemic in type. For distribution according to locality, see page 1120.

MEXICO

Smallpox—Tuxpam District—April-May, 1925.—Information dated May 7, 1925, shows prevalence of smallpox in Tuxpam District, Mexico, with 20 cases and three deaths reported for the preceding three-week period. The outbreak was stated to have occurred at Alamo, in a camp of 4,000 persons, located about 25 miles from the port of Tuxpam. It was stated that no cases had occurred at the ports of Tuxpam or Port Lobos.

NEW ZEALAND

Further relative to epidemic poliomyelitis, New Zealand—March 3–April 13, 1925.—During the period March 3 to April 13, 466 cases of poliomyelitis with 63 deaths were reported in New Zealand.[1]

UNION OF SOUTH AFRICA

Plague—Boshof District—March 29–April 4, 1925.—During the week ended April 4, 1925, three cases with one death of plague were reported in the Union of South Africa. The cases occurred on farms in Boshof District, and in the native population.

WEST AFRICA

Plague—Smallpox—Lagos.—Under date of May 19, 1925, plague and smallpox were reported present at Lagos, West Africa.

YUGOSLAVIA

Communicable diseases—Year 1924—January–February, 1925.—During the year 1924 and the months of January and February, 1925, communicable diseases were reported in the Kingdom of the Serbs, Croats, and Slovenes (Yugoslavia) as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria	1,635	284	Scarlet fever	9,787	2,038
Dysentery	3,104	345	Smallpox	330	64
Malaria	48,012	150	Typhoid fever	5,999	697
Measles	23,673	342	Typhus fever	319	22
Mumps	1,600	10	Whooping cough	4,664	177
Recurrent fever	15				
JANUARY, 1925					
Anthrax	24	5	Scarlet fever	960	212
Cerebrospinal meningitis	8	2	Smallpox	4	1
Diphtheria	129	37	Typhoid fever	376	68
Dysentery	26	8	Typhus fever	36	1
Lethargic encephalitis	3	2	Whooping cough	466	35
Measles	1,720	34			
FEBRUARY, 1925					
Anthrax	19	4	Recurrent fever	1	
Cerebrospinal meningitis	18	7	Scarlet fever	766	150
Diphtheria	123	22	Smallpox	2	
Dysentery	27	3	Typhoid fever	266	30
Lethargic encephalitis	7	1	Typhus fever	51	7
Measles	1,880	27	Whooping cough	710	42

Population, 12,017,323.

[1] Public Health Reports, May 22, 1925, p. 1076.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended May 29, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Mar 15-28, 1925: Cases, 3,941; deaths, 2,185.
Madras	Apr 5-18	3	1	
Rangoon	Mar. 29-Apr. 11	6	3	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Brazil:				
Bahia	Apr. 5-18	2	1	
Ceylon:				
Colombo	Mar 29-Apr 14	5	4	
Egypt				Apr 16-22, 1925: Cases, 1, Jan. 1-Apr 22, 1925 Cases, 24, deaths, 14 Corresponding period, year 1924, cases, 112
Hawaii				Apr 28, 1925 One plague rodent trapped, Apr. 30, 1925 One plague rodent trapped. Vicinity of Pacific Sugar Mill, Island of Hawaii
India				Mar. 15-28, 1925: Cases, 13,548; deaths, 11,915.
Bombay	Mar 22-Apr. 4	20	14	
Karachi	Apr 12-18	1		
Madras Presidency	Mar 15-21	83	53	
Rangoon	Mar 29-Apr 11	30	28	
Java:				
East Java -				
Soerabaya	Mar 12-25	8	8	
West Java -				
Residency—				
Cheribon	Mar. 5-11		14	
Pekalongan	do		28	
Tegal	do		3	
Madagascar				
Tananarive Province				Mar. 1-15, 1925. Cases, 99; deaths, 92. Bubonic, 64 cases; pneumonic, 13; septicemic, 22.
Tananarive town	Mar 1-15	3		Pneumonic.
Straits Settlements				
Singapore	Mar 29-Apr 4	1		
Syria.				
Beirut	Apr. 1-10.	1		
Union of South Africa				Mar 29-Apr 4, 1925, Cases, 3; deaths, 1 Native.
Boshof District	Mar. 29-Apr. 4	3	1	On farms.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Brazil:				
Pernambuco	Mar. 15-28	8	6	
Ceylon				
Colombo	Mar 29-Apr. 11	5		Port cases, 4; town, 1 case.
China.				
Chungking	Apr. 12-18			Prevalent.
Shanghai	Apr. 12-25	2	1	
Great Britain:				
Newcastle on Tyne	Apr. 26-May 2	1		
India				Mar 15-28, 1925: Cases, 15,979; deaths, 3,647.
Bombay	Mar. 22-Apr. 4	131	71	
Karachi	Apr 12-18	16	2	
Madras	Apr. 5-18	197	77	
Rangoon	Mar. 29-Apr. 11	227	98	
Japan				
Nagasaki	Apr. 20-26	1	3	
Java:				
East Java—				
Soerabaya	Mar. 12-25	98	9	

[1] From medical officers of the Public Health Service, American consuls and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended May 29, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico.				
Guadalajara	May 5-11		5	
Mexico City	Apr. 19-25	5		Including municipalities in Federal district.
San Luis Potosi	May 3-9		1	
Torreon	Apr. 1-30	1	1	
Tuxpam district	Apr. 17-May 7	20	3	
Peru:				
Arequipa	Jan. 1-31		3	
Do	Feb 1-28		1	
Poland				Feb. 8-14, 1925 2 cases.
Spain:				
Malaga	Apr. 26-May 2		2	
Valencia	do	1		
Switzerland:				
Berne	Mar. 29-Apr 11	3		
Syria				
Beirut	Apr. 1-10	1		
Tunis				
Tunis	Apr 30-May 6	8	13	
Yugoslavia				Year 1924 Cases, 330; deaths, 64.
Do				Jan. 1-31, 1925 Cases, 4, deaths, 1. Feb 1-28, 1925 Cases, 2.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Apr. 11-20	1	1	In villages in the department of Algiers, 24 cases in the native population and 3 among Europeans
Mexico:				
Mexico City	Apr. 19-25	5		Including municipalities in Federal district.
Peru.				
Arequipa	Mar. 1-31		1	
Poland				Feb 8-21, 1925: Cases, 246; deaths, 19.
Tunis				
Tunis	Apr. 30-May 6	1		
Union of South Africa.				
Cape Province	Mar 29-Apr. 4			Outbreaks.
Port Elizabeth	Mar. 1-7		1	
Natal	Mar. 29-Apr. 4			Do.
Yugoslavia				Year 1924 Cases, 319; deaths, 22. Jan. 1-31, 1925 Cases, 36; deaths, 1. Feb. 1-28, 1925: Cases, 51, deaths, 7.

Reports Received from December 27, 1924, to May 22, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Dec. 27, 1924: Cases, 14; deaths, 13. Dec 28, 1924-Jan. 24, 1925. Cases, 24; deaths, 17.
Colombo	Nov. 16-22	1		
Do	Jan. 11-24	2	2	
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 27,164, deaths, 16,228. Jan 4-Mar. 14, 1925: Cases, 22,186; deaths, 13,277.
Bombay	Nov 23-Dec 20	4	4	
Do	Jan. 18-24	1	1	
Calcutta	Oct. 26-Jan 3	59	51	
Do	Jan. 4-Mar 21	205	164	
Do	Mar. 29-Apr. 4	49	46	Reported to be epidemic May 9, 1925.
Madras	Nov 16-Jan. 3	69	40	
Do	Jan 4-Mar. 7	139	99	
Rangoon	Nov. 9-Dec 20	9	2	
Do	Jan. 4-Mar. 28	14	10	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 22, 1925—Continued

CHOLERA—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China				Aug 1-Sept 30, 1924: Cases, 14; deaths, 10. Dec. 1-31, 1924: Cases, 5; deaths, 2.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept 30	6	5	
Do	Dec. 1-31	1		
Cochin-China	Aug 1-Dec. 31	10	5	
Saigon	Nov. 30 Dec 6	1		
Do	Mar 15-21	1	1	
Tonkin	Dec. 1-31	1	1	
Siam:				
Bangkok	Nov 9 29	4	2	
Do	Jan 18 Mar 21	8	5	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores				
Fayal Island—				
Castelo Branco	Nov 25			Present with several cases
Feteira	do	1		
St Michael Island	Nov 2-Jan 3	30	13	
Do	Jan. 18-24	3	1	
Brazil				
Bahia	Jan 4-Apr. 4	9	6	
Santos	Year, 1924	2		Bubonic
British East Africa				
Tanganyika Territory	Nov 23-Dec 27	17	10	
Do	Jan 18-Mar 14	18	12	
Uganda	Aug-Dec, 1924	279	243	
Do	Jan. 1-31	29	28	
Canary Islands				
Las Palmas	Jan 21-23	2		Stated to be endemic
Do	Feb 4	1		Stated to have been infected with plague Sept 30, 1924
Do	Mar. 26	1	1	
Realejo Alto	Dec 19	3	1	Vicinity of Santa Cruz de Teneriffe
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity
Celebes				
Macassar	Oct 29			Epidemic.
Ceylon				
Colombo	Nov 9-Jan 3	12	9	
Do	Jan 4-Mar 28	16	17	
China				
Foochow	Dec 28-Jan. 3			Present
Nanking	Nov 23-Mar. 7			Do.
Shing Hsien	October, 1924		790	
Ecuador				Mar 16-Apr 15, 1925 Cases, 10; deaths, 4 Rats taken, 22,290; found infected, 60
Chimborazo Province—				
Alausi District	Jan. 14		14	At 2 localities on Guayaquil & Quito Ry
Daule	Mar. 16-31	1		
Guayaquil	Nov. 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92.
Do	Jan. 1-Apr 15	68	29	Rats taken, 45,027; found infected, 234
Naranjito	Feb. 16-Mar. 15	1		
Yaguachi	Feb. 1-Mar. 15	2	1	
Egypt				Year 1924 Cases, 373. Jan. 1-Apr. 15, 1925: Cases, 23; deaths, 13.
Gold Coast				September-December, 1924: Deaths, 52.
Greece:				
Patras	Apr. 5	1		
Hawaii.				
Honokaa	Nov. 4	1		Plague-infected rodents found Dec. 9, 1924, and Jan. 15, 1925.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 22, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
India				Oct 19, 1924, to Jan. 3, 1925: Cases, 28,154; deaths, 21,505. Jan. 4-Mar 14, 1925. Cases, 44,124, deaths, 36,647.
Bombay	Nov. 22-Jan 3	4	3	
Do	Jan. 4-17	2	2	
Do	Feb 8-Mar. 21	36	33	
Calcutta	Jan 18-24	1	1	
Karachi	Nov. 30-Dec. 6	2	1	
Do	Jan. 4-Feb. 21	12	11	
Do	Mar. 29-Apr 11	5	6	
Madras Presidency	Nov. 23-Jan. 3	685	487	
Do	Jan. 4-24	658	511	
Do	Mar. 8-14	80	48	
Rangoon	Oct. 26-Jan. 3	26	25	
Do	Jan. 4-Mar. 28	157	136	
Indo-China				Aug 1-Sept 30, 1924: Cases, 25; deaths, 20. Dec. 1-31, 1924; Cases, 11, deaths, 11. Corresponding month 1923: Cases, 15; deaths, 5
Province—				
Anam	Aug 1-Sept. 30	4	4	
Do	Dec. 1-31	5	5	
Cambodia	Aug 1-Sept 30	18	15	
Do	Dec. 1-31	6	6	
Cochin-China	do	3	1	
Saigon	Dec 25 31	1	1	Including 100 square kilometers of surrounding territory.
Do	Jan 11-17	2	1	Do.
Iraq	June 29-Jan. 3	20	14	
Bagdad	Mar 22-28	1	1	
Japan	Aug 10 Dec 6	19		
Java				
East Java—				
Blitar	Nov 11-22			Province of Kediri, epidemic.
Pare	Nov. 29			Do.
Samarang	Mar 22-28	2	2	
Sidoardja	Jan. 2			Declared epidemic, Province of Soerabaya
Soerabaya	Nov. 16-Dec 31	71	72	
Do	Jan. 15-Mar. 11	17	14	Mar 29-Apr. 4, 1925: 2 plague rats found.
Soerakarta	Feb. 20			Epidemic plague in one locality.
West Java—				
Cheribon	Oct 14-Nov 3		14	
Do	Nov 18-Dec. 22		80	
Do	Jan 1-14		44	
Do	Feb 5-11		13	
Do	Feb 19-25		13	
Pasoeroean	Dec. 27			Province Epidemic in one locality.
Pekalongan	Oct 14-Nov 3		29	
Do	Nov 18-Dec. 31		177	Pekalongan Province.
Do	Jan. 1-14		81	
Do	Feb. 5-11		36	
Do	Feb. 19-25		38	
Probalingga	Dec 27			Province. Epidemic.
Tegal	Oct 14-Dec. 31		26	
Do	Jan. 1-14		37	Pekalongan Province.
Do	Feb. 5-11		7	
Do	Feb. 19-25		10	
Madagascar:				
Fort Dauphin (port)	Nov. 1-Dec. 15	12	5	
Do	Feb. 1-15	1	1	Bubonic.
Itasy Province	Nov 1-Dec. 15	4	2	
Do	Feb. 1-28	3	3	
Majunga (port)	Nov. 1-30	1	1	
Moramanga Province				Nov. 1-Dec. 15, 1924: Cases, 49; deaths, 34. Jan. 16-Feb. 28, 1925 Cases, 6; deaths, 6.
Tamatave (port)	Nov. 1-30	1	1	
Tananarive Province				Oct. 16-Dec. 31, 1924: Cases, 298; deaths, 274.
Do				Jan. 1-Feb. 28: Cases, 357; deaths, 295.
Tananarive (town)	Oct. 16-Nov 30	8	7	
Do	Dec. 16-31	4	4	
Do	Jan. 1-Feb. 28	4	4	
Mauritius Island				Year 1924: Cases, 161; deaths, 144.
District—				
Flacq	Dec. 1-31	5	4	
Pamplemousses	do	1	1	
Plaines Wilhems	January-December, 1924.	54	47	Not present March, April, May.
Port Louis	February-December, 1924.	101	92	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 22, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Mexico.				
Tampico	Apr. 6, 1925			Plague rat found in vicinity of Government wharves.
Morocco:				
Marrakech				Feb. 9, 1925 Present in native quarter of town. Stated to be pneumonic in form and of high mortality.
Nigeria				August-November, 1924. Cases, 387, deaths, 317.
Palestine:				
Jerusalem	Mar. 3-9	1		
Peru.				
Callao	February, 1925	6	6	
Siam:				
Bangkok	Dec. 28-Jan 3	1	1	
Do	Jan 25-Mar. 21	7	6	
Siberia.				
Transbaikalia—				
Tunga	October, 1924		3	On Chita Railroad
Straits Settlements.				
Singapore	Nov 9-15	1	1	
Do	Jan. 4-Apr. 4	27	8	
Syria.				
Beirut	Jan 11-20	1		
Turkey.				
Constantinople	Jan 9-15	5	5	
Union of South Africa	Nov 22-Jan. 3	28	15	In Cape Province, Orange Free State, and Transvaal
Do	Jan 4-Mar. 28	52	22	Do.
On vessels:				
S. S. Conde				At Marseille, France, Nov. 8, 1924. Plague rat found Vessel left for Tamatave, Madagascar, Nov 12, 1924
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec 31, 1924: Cases, 409.
Algiers	Jan. 1-Mar 31	10		Jan 1-20, 1925. Cases, 107
Arabia.				
Aden	Jan. 25-Apr. 18	14	1	
Argentina				
Buenos Aires	Mar 15-21	1		
Belgium	Jan. 1-Feb 10	4		
Bolivia.				
La Paz	Nov. 1-Dec 21	20	11	
Do	Jan. 1-Mar. 31		12	
Brazil				
Pernambuco	Nov. 9-Jan 3	100	27	
Do	Jan. 4-Mar. 14	103	50	
British East Africa:				
Kenya—				
Mombasa	Jan 18-Feb. 28	66	14	
Do	Mar. 8-28	29	7	
Uganda—				
Entebbe	Oct. 1-31	4		
Tanganyika Territory	Feb. 15-21	1		
British South Africa				
Northern Rhodesia	Oct. 28-Dec. 15	57	2	
Do	Jan. 27-Feb. 2	3		Natives.
Southern Rhodesia	Jan. 29-Mar. 25	4	1	
Bulgaria.				
Sofia	Mar. 12-18	1		Varioloid.
Canada:				
Alberta—				
Calgary	Mar. 15-21	1		
British Columbia—				
Ocean Falls	Mar. 7-27	6		Very mild.
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan 4-Apr. 12	305		
Do	Apr. 19-May 3	11		
Victoria	Jan. 18-Apr. 25	11		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 22, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Canada—Continued.				
Manitoba—				
Winnipeg	Dec 7-Jan 3	14		
Do.	Jan 4-Feb 27	30		
Do	Apr 5-11	1		
New Brunswick –				
Northumberland	Feb. 8 14	1		County
Ontario				Nov 30-Dec 27, 1924 Cases, 33. Dec 28, 1924, to Apr 25, 1925: Cases, 69, deaths, 1.
Hamilton	Jan 24-30	1		
Kingston	Apr 12-18	1		
Ottawa	Mar 29 Apr 4	1		
Do	May 3-9	2		
Welland	Mar. 22-Apr 25	7		
Ceylon				July 27-Nov 29, 1924. Cases, 27; deaths, 1.
Colombo	Jan 18-Feb. 7	4		
Do	Mar 8-28	11		
China				
Amoy	Nov 9-Feb 21			Present
Do.	Feb 22-Mar 28		11	
Antung	Nov. 17 Dec 28	5		
Do	Jan 5-Feb 14	15	1	
Do	Mar 2-Apr 5	9	1	
Canton	Mar 15 Apr 11			Prevalent
Chefoo	Mar 15 22			Prevalent No foreign cases
Chungking	Mar 22-Apr 4			Stated to be widely prevalent; less than in period in year 1924.
Foochow	Nov 2-Mar. 28			Present
Hongkong	Nov 9 Jan 3	6	2	
Do.	Jan 4 Feb 7	9	7	
Do.	Feb 15 Apr 4.	27	13	
Manchuria –				
Dairen	Jan 19 Mar 15	4		
Harbin	Jan 15-Feb 11.	5		
Nanking	Jan 4-Mar 28			Do.
Shanghai	Dec 7-27	1	2	
Do.	Jan 18 Mar 7		8	
Chosen				
Seoul	Dec. 1 31	1		
Do	Mar 1-31	2		
Colombia				
Buenaventura	Feb 15-Apr 4	3		
Santa Marta	Mar 15-28			Present in mild form in localities in vicinity.
Cuba:				
Santiago	Apr 12-18	3	1	
Czechoslovakia				April-June, 1924, Cases, 1, occurring in Province of Moravia.
Dominican Republic				
Puerta Plata	Mar 8-21	3		
Dutch Guiana:				
Paramaribo	Apr 20	1		
Ecuador:				
Guayaquil	Nov. 16-Dec 15	4		
Egypt:				
Alexandria	Nov 12-Dec 31	10		
Do.	Jan. 8-28	8		
Do.	Feb 26 Mar. 4	1		
Cairo	Jan. 29-Feb 4	1	1	
Esthonia				Dec. 1-31, 1924 Cases, 2.
France				July-December, 1924: Cases, 81
Do	January, 1925	10		
Dunkirk	Mar 2-8	1		From vessel In quarantine.
St. Malo	Feb. 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis.
Germany				June 29-Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan 1-10	1		
Gibraltar	Dec. 8-14	1		
Gold Coast				July-December, 1924: Cases, 106; deaths, 1.
Great Britain:				
England and Wales	Nov. 23-Jan. 3	472		
Do.	Jan. 4-Apr 18	2,047		
Newcastle-on-Tyne	Jan. 18-Feb. 21	9		
Do.	Mar. 1-7	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 22, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Greece				January-June, 1924: Cases, 170; deaths, 27
Do				July-December, 1924: Cases, 38; deaths, 26.
Saloniki	Nov. 11-Dec 22	3		
Do	Feb 17-Mar 2	4		
Haiti:				
Cape Haitien	Mar. 22-Apr. 2	6		
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 12,564; deaths, 2,857. Jan 4-Mar. 14, 1925. Cases, 38,647; deaths, 8,847.
Bombay	Nov 2-Jan. 3	30	18	
Do	Jan 4-Mar 21	470	236	
Calcutta	Oct. 26-Jan 8	307	170	
Do	Jan 4-Mar. 21	2,669	1,875	
Do	Mar 29-Apr 4	392	260	
Karachi	Nov. 16-Jan 3	16	2	
Do	Jan 4-Feb. 14	52	6	
Do	Feb. 22-Apr 11	69	21	
Madras	Nov 16-Jan 3	122	48	
Do	Jan. 4-Mar. 7	552	212	
Do	Mar 15-Apr 4	292	120	
Rangoon	Oct 26-Jan 3	86	28	
Do	Jan 4-Feb 7	287	49	
Do	Feb 15-Mar 28	894	127	
Indo-China				Aug. 1-Sept 30, 1924 Cases, 223; deaths, 76. Dec. 1-31, 1924. Cases, 485, deaths, 114.
Province—				
Anam	Aug. 1-Sept 30	49	11	
Do	Dec 1-31	167	26	
Cambodia	Aug. 1-Sept. 30	40	9	
Do	Dec 1-31	30	13	
Cochin-China				Aug 1-Sept. 30, 1924: Cases, 115; deaths, 49 Dec. 1-31, 1924: Cases, 50; deaths, 13.
Saigon	Nov. 16-Jan 3	17	5	Including 100 square kilometers of surrounding country.
Do	Jan. 4-Feb 21	32	8	
Do	Mar 1-28	39	6	Do.
Tonkin	Aug 1-Sept 30	19	7	
Do	Dec. 1-31	238	62	
Iraq	June 29-Jan. 10	138	67	
Do	Jan 11-20	4	2	
Bagdad	Nov. 9-Dec. 27	2	1	
Do	Mar. 1-28	2		
Italy				June 29-Dec 27, 1924: Cases, 63.
Jamaica				Nov 30, 1924-Jan 3, 1925: Cases, 50. Reported as alastrim.
Do				Jan. 4-Apr 25, 1925: Cases, 275. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim.
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Nagasaki	Feb. 9-Apr. 19	30	6	
Taiwan	Jan 1-31	1		
Java:				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in 2 native villages.
Soerabaya	Oct. 19-Dec. 31	685	212	
Do	Jan. 15-Mar. 11	461	69	
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov. 14	2		
Do	Dec. 20-Jan. 2	19	4	
Buitenzorg	Dec. 25-31	1		Batavia Residency.
Cheribon	Oct. 14-Nov. 24	15		
Do	Jan. 1-28	3		
Krawang	Jan. 15-21	1		
Pekalongan	Oct. 14-Nov. 24	22		
Do	Dec. 25-31	3		Province.
Pemalang	Jan 8-14	1		Pekalongan Residency.
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5. Jan 1-Feb. 28, 1925: Cases, 6.
Lithuania				Jan 1-31, 1925: Cases, 2.
Malta				Apr. 1-15, 1925: Cases, 3.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 22, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico:				
Chiapas (State)	Mar 1			Reported severely prevalent.
Durango	Dec 1-31		5	
Do	Jan. 1-Apr. 30		29	
Guadalajara	Dec 23-29		1	
Do	Jan. 6-Mar. 23		4	
Do	Apr 21-May 4		6	
Mexico City	Nov 23-Dec 27	5		
Do	Jan 11-Apr. 18	57		
Monterey				Jan. 24, 1925: Outbreak. Mar. 14, 1925, present
Oaxaca (State)	Mar 1			Reported severely prevalent.
Salina Cruz	Dec 1-31	1	1	
Do	Feb 22-Mar 31	7	1	
Saltillo	Feb 22-Apr 11		2	
San Luis Potosi	Mar 29-May 2		3	
Tampico	Dec 11-31	5	4	
Do	Jan 1-Apr 30	66	20	
Vera Cruz	Dec 1-Jan 3		10	
Do	Jan 5-Apr 19		39	
Villa Hermosa	Dec 28-Jan 10			Present Locality, capital, State of Tabasco
Yucatan (State)	Apr. 5-11			In country towns
Nigeria				January-June, 1924: Cases, 357; deaths, 87
Do				July-November, 1924: Cases, 87; deaths 25.
Paraguay				
Asuncion	Jan 4-10		1	
Persia				
Teheran	Sept 23-Dec 31		12	
Do	Jan 1-Feb 18		10	
Peru				
Arequipa	Nov 24-30		1	
Do	Jan 1-31		3	
Philippine Islands:				
Manila	Mar. 29-Apr 4	3		
Poland				Sept 21-Dec. 28, 1924 Cases, 30; deaths, 2 Jan 4-Feb 7, 1925: Cases, 13, deaths, 1
Portugal				
Lisbon	Dec 7-Jan 3	17		
Do	Jan 4-Apr. 25	140		Jan. 4-Apr. 18, 1925. Deaths, 35.
Oporto	Nov 30-Dec 27	3	2	
Do	Jan 11-Mar 14	3		
Do	Apr 12-25	2		
Russia				January-June, 1924 Cases, 18,229. July-November, 1924. Cases, 3,665.
Senegal				
Dakar	Mar 16-22	4		
Siam:				
Bangkok	Dec 28-Jan. 3	1	1	
Do	Jan 18-Feb. 21		19	
Do	Mar 1-21	11	4	
Sierra Leone:				
Freetown	Feb. 7-Mar. 15	3		
Kaiyima	Mar. 9-15	1		
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Do	Mar 19-25		1	
Cadiz	Nov 1-Dec. 31		51	
Do	Jan. 1-Feb. 28		10	
Madrid	Year 1924		40	
Do	January-February		13	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-Apr 25		96	
Valencia	Nov. 30-Dec. 6	2		
Do	Feb. 15-Mar. 28	5		
Straits Settlements:				
Singapore	Feb 22-Apr. 4	4	1	
Switzerland:				
Berne	Mar 15-21	1		
Lucerne	Nov 1-Dec. 31	19		
Do	Jan. 1-31	24		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 22, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Syria:				
Aleppo	Nov. 23-Dec 27	13		
Do	Jan. 4-Feb 28	71	18	
Beirut	Feb 11-20	1		
Damascus	Jan. 6-13	2		
Do	Feb. 11-20	22		
Tripoli:				
Tripoli	July 14-Jan. 2	53		
Tunis:				
Tunis	Nov. 25-Dec 29	42	35	
Do	Jan. 1-Apr 22		325	
Turkey:				
Constantinople	Dec. 13-19	5		
Do	Mar. 16-Apr. 15	5	1	
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 14. Jan. 1-31, 1925 Cases, 4—natives
Cape Province	Feb. 1-21			Outbreaks.
De Aar District	Jan 25-31			Outbreak at railway camp.
Do	Nov 9-Jan. 17			Outbreaks.
Natal	Mar 1-7			Do.
Orange Free State	Nov. 2-8			Do
Ladybrand District	Jan 15-31			Outbreak on farm
Transvaal	Nov. 9-Jan 10			Do
Do	Feb. 1-21			Outbreaks
Uruguay				January-June, 1924 Cases, 101; deaths, 2
Do				July-November, 1924. Cases, 53; deaths, 2.
Yugoslavia:				
Belgrade	Mar. 1-Apr. 7	6		
On vessel				
S. S. Eldridge	Mar 23	1		At Port Townsend, from Yokohama and ports
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St. Malo, France, January, 1924, from Sfax, Tunis; believed to have imported smallpox infection.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 101; deaths, 14.
Algiers	Nov. 1-Dec. 31	5	1	
Do	Jan. 1-Mar. 31	13	6	
Argentina.				
Rosario	Jan. 1-31		1	
Bolivia:				
La Paz	Nov 1-Dec. 31	3		
Do	Jan. 1-31	2		
Do	Mar. 1-31	1		
Bulgaria				January-June, 1924: Cases, 191; deaths, 28.
Do				July-October, 1924: Cases, 5.
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Do	Jan. 6-12		2	
Do	Jan. 27-Feb. 2		1	
Iquique	Nov. 25-Dec. 1		2	
Do	Feb 1-Mar. 28		2	
Talcahuano	Nov. 16-Dec. 20		5	
Do	Jan. 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-Mar. 28		17	
China:				
Antung	Mar. 16-22	1		
Chosen				
Chemulpo	Feb. 1-28	1		
Seoul	Nov. 1-30	1	1	
Do	Feb. 1-Mar. 31	6	2	
Czechoslovakia				December, 1924: Cases, 5.
Do	Jan. 1-31	14		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 22, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Egypt:				
Alexandria	Dec. 3-9	1	1	
Do	Mar. 12-18	1		
Cairo	Oct 1 Dec. 23	13	8	
Do	Jan 22-28	1		
Esthonia				Dec 1-31, 1924: Cases, 5.
Do	Jan 1-31	4		
France				July-October, 1924: Cases, 7.
Gold Coast				Oct. 1 31, 1924 1 case.
Greece				May-June, 1924 Cases, 116; deaths, 8
Do				July-December, 1924 Cases, 40; deaths, 4
Athens	Feb 1-Apr. 10		10	
Saloniki	Nov. 17-Dec 15	3	2	
Do	Jan. 25-31	1		
Japan				Aug. 1-Nov. 15, 1924. Cases, 2.
Latvia				October-December, 1924: Cases, 30 Feb 1 28, 1925. Cases, 11.
Lithuania				August-October, 1924. Cases, 15; deaths, 1.
Do				Jan 1-31, 1925: Cases, 27; deaths, 2.
Mexico				
Durango	Dec 1-31		1	
Do	Mar 15-Apr 30	1	2	
Guadalajara	Dec 23-29		1	
Mexico City	Nov 9-Jan 3	80		Including municipalities in Federal District
Do	Jan 11-Apr. 18	91		
San Luis Potosi	Mar 8 14		1	
Do	Apr. 26-May 2		1	
Morocco				November, 1924: Cases, 5
Palestine				Nov. 12-Dec 29, 1924. Cases, 10.
Ekron	Dec 23-29	1		
Jerusalem	do	2		
Do	Jan 20-26	1		
Mikveh Israel	do	1		
Petach-Tikvah	Mar 24 30	1		
Ramleh	Feb 10-Mar 23	2		
Tiberias	Feb 24-Mar 2	2		
Peru.				
Arequipa	Nov 24-Dec 31		3	
Poland				Sept 28, 1924-Jan 3, 1925 Cases, 751, deaths, 57 Jan 4-Feb 7, 1925 Cases, 581, deaths, 49
Portugal:				
Lisbon	Dec 29-Jan 4		2	
Do	Apr 6-12		1	
Oporto	Jan 4-Feb. 7	2		
Rumania				January-June, 1924. Cases, 2,906; deaths, 328.
Do				July-December, 1924. Cases, 288; deaths, 38.
Constanza	Dec 1-20	1		
Do	Feb. 1-28	2		
Russia				Jan. 1-June 30, 1924: Cases, 95,682 July-November, 1924: Cases, 34,729.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec 21-27		1	
Sweden:				
Goteborg	Jan. 18-Feb. 28	2		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Tunis	Mar 5-25	9	1	
Do	Apr. 2-22	24	5	
Turkey.				
Constantinople	Nov 15-Dec. 19	6	1	
Do	Jan. 2-Mar. 7	9	1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 22, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 345; deaths, 87. Jan. 1-Feb. 28, 1925: Cases, 159; deaths, 17; native In white population, cases, 12.
Cape Province	Nov. 1-Dec 31	126	24	
Do	Jan. 1-Mar. 15	74	9	
Do	Mar 22-28			Outbreaks.
East London	Nov 16-22	1		
Do	Jan. 18-Apr. 4	3	2	
Port Elizabeth	Feb 22-28	1		
Natal	Nov 1-Dec. 31	130	50	
Do	Jan. 1-Feb. 28	43	5	
Do	Mar. 1-7			Do.
Durban	Feb 15-Mar. 28	4		
Orange Free State	Nov. 1-Dec. 31	59	8	
Do	Jan. 1-Feb. 28	32	3	Native.
Transvaal	Nov 1-Dec. 31	30	5	
Do	Jan. 1-Feb. 28	10		Do.
Yugoslavia				Aug. 3-Oct. 18, 1924: Cases, 17; deaths, 2. Mar. 8-14, 1925: Cases, 1.
Belgrade	Nov. 24-Dec 28	5		
Do	Apr. 8-14	2		

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Gold Coast	October-November, 1924.	4	4	
Salvador:				
San Salvador	June-October, 1924.	77	28	Last case, Oct. 22, 1924.

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TREASURY DEPARTMENT

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SPECIAL ARTICLES

Studies on Oxidation-Reduction: VIII. Methylene Blue
Current Court Decisions Relating to Public Health

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UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst. Surg. Gen. B. J. LLOYD, *Chief of Division*

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PUBLIC HEALTH REPORTS

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STUDIES ON OXIDATION-REDUCTION

VIII. METHYLENE BLUE

By W. MANSFIELD CLARK, Chief of Division of Chemistry, BARNETT COHEN, Chemist, and H. D. GIBBS, Senior Chemist, Hygienic Laboratory, United States Public Health Service

CONTENTS

I. Introduction

As litmus was formerly the favorite detector of "acidity," so methylene blue is to-day the favorite indicator of reduction.

The reason for this would be difficult to see without historical perspective. The past has left no accumulation of data on oxidation-reduction comparable in type to the semi-quantitative data which led to the supremacy of litmus in differentiating "acidity" from "alkalinity." No one, to our knowledge, ever drew an artificial line of demarcation between oxidative and reductive solutions at the region of methylene blue decoloration; and while certain specific phenomena have been treated as if methylene blue were a unique reagent, there has remained a saving sense of a wider view. But when we trace significant events in the history of this interesting dye, we find that at almost the same moment it gained prestige as an invaluable staining reagent (Dreser, 1885, Ehrlich, 1886), and as an indicator of biochemical reduction (Ehrlich, 1885). As a staining reagent, the commercial grade of this dye has ever since been considered an essential of cytological equipment. As an indicator of biochemical reduction, it has held its place through a process akin to natural selection.

We are now able to show in quantitative terms what can be guessed from Ehrlich's (1885) qualitative study of the combined velocity, capacity, and intensity factors of biological reduction; namely, that the oxidation-reduction system of methylene blue stands in the scale of oxidation-reduction *intensity* distinctly beyond the position of the very easily reduced indophenols, but yet distant from the utmost limit of reduction intensity. Consequently, the decoloration of methylene blue reveals a reduction intensity unmistakably distinct, yet not extreme. Moreover, it is a much more intense tinctorial agent than the sulphonated indigoes, the potentials of which stand midway between the reductive intensity of indophenols and the extreme of hydrogen overvoltage. Thus methylene blue, among the many dyes which were products of an enthusiasm for "synthetic colors," happened without design to possess characteristics so well adapted to a first crude survey of biological reduction that it has survived.

As a staining reagent, and as an indicator of reduction, methylene blue soon became a common laboratory supply. As such it seems to have fallen into almost every conceivable use, ranging from an indicator in volumetric analysis to a therapeutic agent.

In several of these uses there can now be revealed common principles. Since these are operative in phenomena which have been cited by those who have speculated upon biological oxidation, we shall make this paper the occasion for remarks of general interest.

First we shall lay before the reader the data that we have obtained on the oxidation-reduction equilibria.

The main features of the potentiometric studies are so like those described in previous papers of this series that only special aspects need be mentioned. However, these special aspects are important for an appreciation of the more formally tabulated data; and assuming that the reader is familiar with the main features of previous papers, we shall save space by placing in perspective at the outset the difficulties attending the establishment of accurate characteristic constants for the peculiar compound, methylene blue.

II. Preparation and Analyses of Material

Preparations of methylene blue chloride, which, for brevity, we shall call methylene blue, were made by two well-known methods. An examination of the products and a consideration of the numerous side reactions which are possible, convinced us that the preparation of pure methylene blue is largely a problem of purification subsequent to synthesis. Since commercial preparations were available in the quantity required for adequate fractionation, we made use of them, drawing our supply from five different manufacturers at home and abroad.

In the following summary will be found analytical data which require a foreword. There is still disagreement upon the determination of moisture in methylene blue. Koch (1879) and Bernthsen (1885) report different results. Atack (1915) states that methylene blue is not completely dried at 105° C. and that decomposition sets in at 110° C. Wales and Nelson (1923) state that "in every case the salts (*samples of methylene blue chloride*) could be completely dehydrated by drying them at 110° for one day, thereby confirming Koch's results." Wales and Nelson used a vapor-pressure method involving drying at low pressures. *In vacuo* (2 cm. Hg.), at 100° C., our samples attained only *approximate* constancy of weight within the periods recorded below and underwent changes, presently to be mentioned, which make us skeptical regarding the significance of this and further drying.

Loss on drying sample F

	Gram	Loss, per cent.
Weight of sample before drying	0. 5008	-----
Weight of sample after 5 hours drying	. 3922	21. 69
Weight of sample after 8 hours drying	. 3914	21. 85
Weight of sample after 13.5 hours drying	. 3908	21. 96

Loss on drying sample G

Weight of sample before drying	0. 5026	-----
Weight of sample after 2 hours drying	. 3967	21. 07
Weight of sample after 7 hours drying	. 3940	21. 61
Weight of sample after 11 hours drying	. 3933	21. 75

These samples had been recrystallized from water and dried for a short time in air at laboratory temperature. For a similar preparation, Atack found, indirectly by titanium titration, 22.7 per cent moisture. This, he noted, agreed closely with the formula containing "$5H_2O$," for which the percentage moisture should be 21.99. As indicated above, our water-crystallized samples give "moistures" close to that required by five molecules of water of crystallization; but as Wales and Nelson (1923) have shown, their vapor-pressure method gives no evidence that this water is present as water of crystallization. It is not perfectly clear that Atack's experiment on drying was made with material which contained no trace of ethanol. We found that a sample containing ethanol, on heating in air at 40°, gave a "disagreeable odor," as noted by Atack. We recognized the odor of acetaldehyde.

Assuming, for purposes of comparison only, the essential correctness of the "moisture determinations," we can put our data in the form shown in Table 1.

TABLE 1.—*Comparison of estimated dye content of methylene blue samples*

Sample	"Moisture" (per cent)	Percentage dye in anhydrous material calculated from—				
		"Moisture" content	Nitrogen content	Titanium titration		
				Before drying	After drying	Loss on drying
F......	22.0	[1] *100*	99.4	98.2	80.2	18.0
G......	21.8	*100*	98.7	98.1	85.8	12.3
A......	12.8	*100*	101.1	94.4	48.1	46.3
H......	16.9	*100*	....	97.8	75.0	22.8
B......	....	....	*100*	97.0	90.9	6.1

[1] Figures in italics are arbitrary reference values.

Samples F and G had been "air-dried" at room temperature. For these there is shown, on the one hand, a substantial although not satisfactory agreement in three different estimates of anhydrous dye, and, on the other hand, a very serious loss in titratable material on drying. Sample A had had no heat treatment so far as we know. However, the available record states that it had been "desiccated." The sensitiveness of this sample to desiccation was suggested by the first titanium titration, and was made very evident on heat treatment. Sample H was a commercial one and we know nothing of its possible previous heat treatment. In the case of A and H our heading "before drying" in Table 1 refers to treatment in our hands. A portion of sample H was also dried in air at 150° C. The resulting material was quite insoluble in water and in ethanol and could not be titrated. Data on sample B are included, although the percentage of dye is estimated on the basis of nitrogen. Progressive drying gave in sequence 90, 70, 60 per cent titratable material.

Atack's note on the effect of drying differs in detail from our observation, but the general import, which Atack had no occasion to emphasize, is the same. There is uncertainty regarding the value or even the meaning of "moisture" determinations in a scheme of analytical assay; and yet for this compound, which persistently occludes material that interferes with precise assay through chlorine and sulphur determinations, "moisture" determinations are of importance. According to Wales and Nelson the water held by methylene blue is not constitutive even to the extent of being water of crystallization. Yet its loss under the conditions that we have described is associated with loss of the essential properties of methylene blue. The effects of long desiccation at low temperature

should be investigated in detail. We suspect slight denaturation even at low temperature.

Finally, since an error of one millivolt in otherwise accurate electrometric measurements can be occasioned by 2 per cent of reactive impurity, it is evident that the *precise* definition of electrometric constants is impossible until analytical control to within at least a few tenths of a per cent is assured.

Sample A.—This was a portion of the material purified by Mr. Zoller in 1919 and used in the studies reported in Clark's (1920) preliminary paper. The detailed description of the purification has been lost, but according to the available record the material was dried at room temperature *in vacuo* over stick KOH and concentrated H_2SO_4.

We found 11.54 and 11.64 per cent nitrogen. The average indicated 88.2 per cent anhydrous dye, while moisture determination indicated 87.2 per cent and titanium titration 82.3 per cent.

Sample B.—Sixty grams were added to 500 c. c. of water containing 10 c. c. of concentrated HCl. The suspension was heated on a water bath one hour and then filtered. On cooling, a large part crystallized out. The crystals were dried in air 48 hours, and then were placed in 250 c. c. of absolute ethanol which was heated to boiling. The solution was then filtered into 300 c. c. of ether. The resulting crystals were sucked dry on a Büchner funnel and dried in a vacuum desiccator for 24 hours. When this material was heated in an air oven (temperature rising slowly to not over 40°), a strong odor of aldehyde was noticed. The crystals were therefore redissolved in water and recrystallized. The final material was sucked dry and dried in an air oven at 60° for 20 hours. Weight, 28 grams.

The percentages of components found in Sample B and anhydrous dye calculated therefrom were as follows:

	Found per cent	Average per cent	Calculated anhydrous dye, per cent
Nitrogen	11.85 11.95	11 90	90.5
Chlorine	10.59 10.51	10.55	95.2
Sulphur (Parr bomb)	10.28 10.27	10.16	101.3
(Fusion)	10.10 10.00		
Sulphate sulphur	Trace		
Ash less than	0.10		

Titration with titanium trichloride indicated 88 per cent anhydrous dye, and progressive drying, as already noted, progressively diminished the titratable material.

Sample C was crystallized from water twice. It was then dissolved in hot absolute ethanol and filtered into ether. The crystals were sucked dry and further dried over soda-lime in a vacuum desiccator at room temperature.

In sample C the percentages of components found and of anhydrous dye calculated therefrom were as follows:

	Found per cent	Average per cent	Calculated anhydrous dye, per cent
Nitrogen	11.41 11.41 11.48	11.43	87.0
Chlorine	9.87 9.82	9.85	88.8
Sulphur (Parr bomb)	9.84 9.75	9.82	97.9
(Fusion)	9.78 9.96 9.76		

Sample E.—In the preparation of this material an attempt was made to remove such excess sulphur as might be present as sulphate. Commercial, medicinal methylene blue was dissolved in acidified water containing 1 per cent barium chloride. After the solution had been heated on a steam bath it was filtered and cooled. The crystals were sucked dry and re-formed from aqueous solution. They were then dissolved in absolute ethanol and the methylene blue was precipitated with ether. The sample was dried at room temperature *in vacuo*.

The 11.50 per cent and 11.58 per cent nitrogen found, indicated 87.8 per cent,—and the moisture content, 87.6 per cent anhydrous dye. There then should have been 8.8 per cent sulphur. There was found by the Parr bomb method 8.84 and 8.44 per cent, average 8.6 per cent, and by the fusion method 8.60 and 8.32 per cent, average 8.5 per cent. On the same basis, chlorine should have been 9.7 per cent, but there was found 10.3 per cent—again an excess. Titanium titration indicated 82 per cent dye.

The material, when studied potentiometrically, behaved as though a reducing material were present in the oxidant. This was confirmed by titrating a solution of the oxidant with quinone. This reducing material probably resulted from the action of ethanol.

Sample F.—A commercial sample of "medicinal methylene blue" was dissolved in hot water, filtered, and cooled. The large crystals which formed over night were filtered with the aid of suction. This process was repeated three more times with particular care in the last two crystallizations to cool the solution very slowly. Thus large, bar crystals were formed. Finally the crystals were spread on filter paper and exposed to a gentle current of air while being turned frequently. After four hours of this drying they were bottled.

Moisture determinations indicated 78 per cent anhydrous dye. On this basis there may be calculated the quantities given below:

	Calculated, per cent	Found, per cent
Nitrogen	10.25	10.19
Chlorine	8.65	8.93
Sulphur	7.82	8.11

On titrating with titanous chloride, there was indicated 76.6 per cent anhydrous dye. The reduced solution was clear, with a slight yellow tinge.

Sample G.—This material was recrystallized four times from water exactly as was sample F, except that it was given a preliminary salting out with NaCl and particular care was taken from the first, by slow cooling, to form large crystals. The sample was air-dried at room temperature exactly as was sample F.

Moisture determinations indicated 78.3 per cent dye. On this basis there may be calculated the quantities given below:

	Calculated, per cent	Found, per cent
Nitrogen	10.28	10.15
Chlorine	8.68	8.91
Sulphur	7.84	8.03

Sample H.—An untreated commercial material.

Sample I.—A material certified by the Commission on Standardization of Biological Stains as suitable for bacteriological and general staining.

Sample J.—This was sample F after repeated extraction with cholorform and ether in a Soxhlet extractor. In the case of the chloroform, extraction was continued until little color, and that apparently methylene blue, was removed. In the case of ether extraction, it was continued until practically no color appeared in the extract. The sample was dried at room temperature *in vacuo.*

Sample K.—A commercial material which spectrophotometric measurements by Mr. French indicated to be of high purity.

In every analyzed sample of methylene blue, except sample E, there was evidence of excess sulphur. In every case there was evidence of excess chlorine even when the material had been crystallized several times from distilled water. The basis of this evidence is the nitrogen value; but if this be set aside, there still persist discrepancies in the ratios of chlorine to sulphur. These ratios should agree with theory even if there were present such impurities as undermethylated thiazines.

Spectrophotometric absorption curves, kindly made by Dr. Scott and Mr. French, of the Walter Reed Hospital Laboratory Service, show appreciable although slight differences between all the samples we have tested.

The titration curves which will be discussed later, all suggest the presence of *small* percentages of electromotively active impurity. Such impurities could be identified were it practicable to apply the method used by Sullivan, Cohen, and Clark (1923) in showing contamination of one sulphonate of indigo by another. But to apply this method it is obvious that basic data for pure materials must have been established.

Undermethylated products.—For a reason which will be made clear later, we thought measurements on an undermethylated product would be useful. Doctor Scott and Mr. French supplied us with a commercial product the absorption curve of which was indicative of a dimethyl thiazine, according to the criteria of Formanek (1908), and Doctor MacNeal (1924) gave us a beautifully crystalline preparation of his dimethyl thionin.

Lauth's violet chloride, hereinafter called Lauth's violet, was prepared by oxidizing a solution of para-phenylene-diamine and hydrogen sulphide with ferric chloride solution.

The para-phenylene-diamine was dissolved in a 10 per cent aqueous solution of hydrochloric acid, and this solution, cooled with ice, was saturated with hydrogen sulphide. The theoretical amount of ferric chloride required for the oxidation was dissolved in water, and the solution was slowly run into the mechanically agitated, cold solution of para-phenylene-diamine, while at the same time hydrogen sulphide was being continuously led in. Finally, an excess of ferric chloride was added. The black mud which separated was filtered on a Büchner funnel and extracted with hot ethanol. From this solution Lauth's violet crystallized on cooling. These crystals were purified by recrystallization from hot ethanol containing sufficient ammonium hydroxide to precipitate the iron compounds present as impurity. Excess of ethanol was removed by drying at low temperature. We have since come to suspect a slight reaction of the dye with ethanol, which may account in part for discrepancies in analysis and in electrode measurements.

Two preparations were made as described. The preparation used contained 14.39 per cent nitrogen, indicating 90.28 per cent anhydrous dye. By titanium-titration there was indicated 89.6 per cent anhydrous dye.

III. Sources of Error

In the titration of thiazines a difficulty arises which was not encountered in operating with the compounds described in our previous papers. The thiazines are bases and tend to form insoluble salts

with some of the acidic oxidizing or reducing agents previously used. For instance, it is impracticable, except for end-point work, to titrate the reductant with ferricyanide or the oxidant with leuco-indigo carmine, because in each case a salt of slight solubility is formed. We have already described in the third article of this series the objections to the titanium method used in the preliminary work of Clark (1920) and of Cohen and Clark (1921). We have, therefore, depended for the determination of an orienting value of E'_0 upon the method of mixtures and upon titrations of reductant with benzo-quinone.

Of these two methods, the quinone-titration method involves a slight source of error due to the fact that the potentials of the thiazine system, on the one hand, and the potentials of the quinone system, on the other, slightly overlap near the end-point of the titration, even at the pH of the buffer used. The error, which is not large, could be quantitatively allowed for and corrected were there not evidence of several other sources of error which render corrections for any one precarious. One such source is of special interest and will now be noted very briefly.

We have described in previous papers our methods of preparing the reductant of a dye by reduction with hydrogen in the presence of platinized asbestos. When filtered from the asbestos, washed with purified nitrogen, and preserved under nitrogen without any rubber connections to the nitrogen train, such solutions have been kept for days without sign of re-oxidation. In the case of reduced methylene blue there promptly appeared re-coloration. This was not due to leakage of oxygen; it was found to be a light effect. Solutions of methylene white prepared as above noted remained perfectly colorless for 24 hours when properly protected from light.

The effect of light can be observed very nicely by the following simple procedure: A solution of methylene blue mixed with a little platinized asbestos (coarse) is placed in a separatory funnel having well-greased glass cocks. The dye is then reduced with a stream of hydrogen. After complete reduction of the dye the cocks are closed, and the asbestos is allowed to settle out in the dark. Upon irradiating the clear supernatant solution with sunlight, the solution becomes blue. If, now, the apparatus is taken into darkness and shaken, the residual hydrogen in the platinized asbestos reduces the solution, and a test of the light effect may be made again. In the absence of the reducing agent the decoloration in darkness will not take place.

We are indebted to the color laboratory of the Bureau of Chemistry for a spectrophotometric measurement showing that the blue color developed by light in a solution of methylene white is methylene blue.

If the methylene white solution and hydrogenated platinized asbestos be kept in a light-tight reservoir over mercury as displacement fluid, portions can be delivered at will through a control cock and a filter. We have used this device to deliver methylene white solution to a narrow, transparent quartz tube, where the color developing on exposure can be compared with a copper sulphate standard. This is an extremely sensitive actinometer.

An attempt was made to determine the region of the spectrum having the greatest effect. For this purpose the actinometer was modified as follows: There was blown from narrow tubing of transparent quartz an electrode vessel of the form shown in Figure 1.

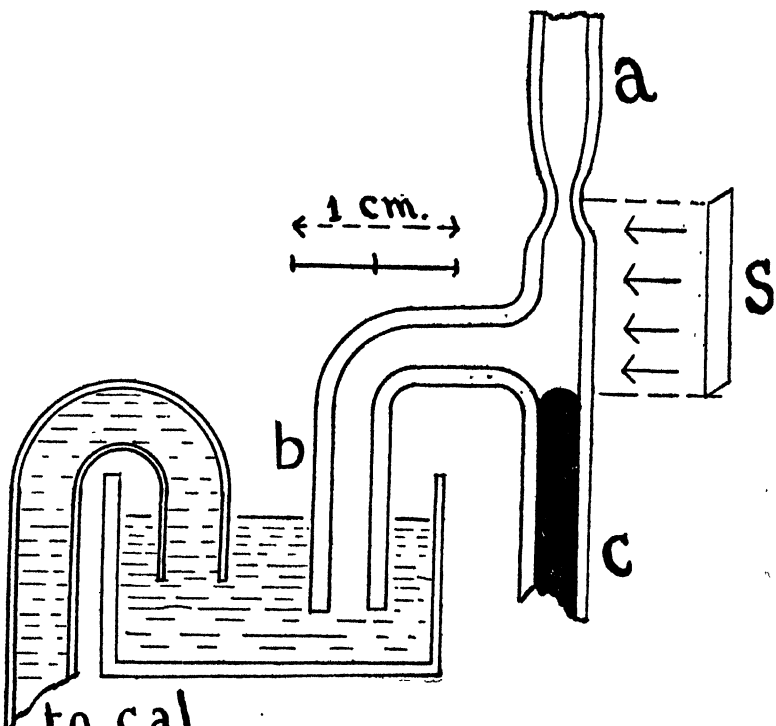


FIG. 1

Methylene white in a citrate buffer solution was delivered from the reservoir through *a*. The mercury electrode in tube *c* could have its surface renewed by wasting mercury from a reservoir into *b*. Tube *b* dipped into a saturated solution of potassium chloride through which was made liquid junction with a calomel half cell. The potential of this chain is a function of the ratio of methylene white to methylene blue. Consequently, by irradiating the methylene white from slit *s* until sufficient oxidant is formed to give a stable potential and then noting the time required on further irradiation for the po-

tential to pass between certain arbitrarily chosen values, we have an indirect measure of regenerated methylene blue which is far more delicate than visual observation of color.

The little vessel was firmly clamped against a slit *s*, placed at the telescope of a Hilger monochromatic illuminator having quartz optical parts.

The light source was a carbon arc operated by a 110-volt alternating current. The control of carbon feed was by clockwork in the main, but had to be supplemented by hand control in an attempt to make this powerful but unsatisfactory light source as steady as possible.

Insignificant changes in potential and no bluing of the solution visible by the light of a carbon filament electric light bulb were noted when light of the visible zones of the spectrum was streaming through the vessel. On the approach to the ultraviolet, bluing and consequent changes in potential were observed.

It is, of course, obvious that only the crudest sort of data can be obtained with the unsteady carbon arc. This is evident in Figure 2, where there are charted in μ the centers of the narrow bands of

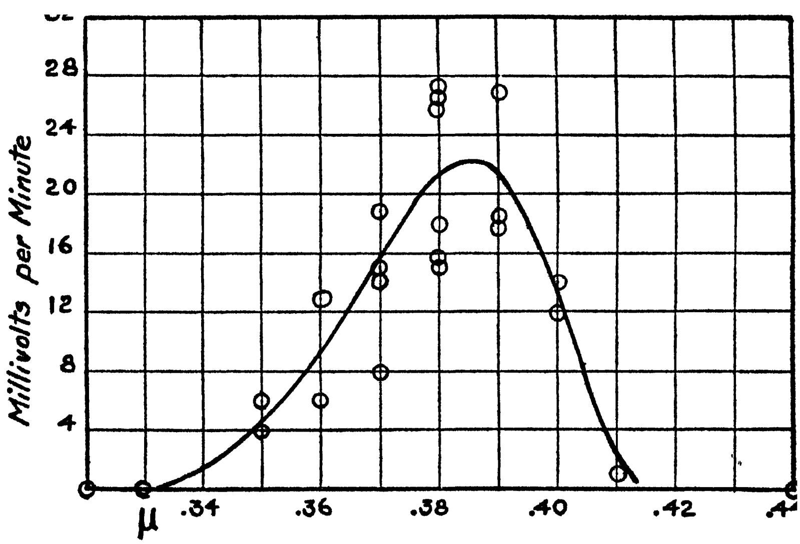


FIG 2

wave lengths passing the slit and, as ordinates, the potential change in millivolts per minute required for the potentials to pass between two arbitrarily fixed points. The relative values of these rates are measures of relative effectiveness of the wave bands. In spite of the crudeness of the data, it is obvious that the maximum effect is centered at about 0.380 μ.

For final definition it will be necessary, of course, to operate with a more satisfactory light source. Nothing definite was gained with

the quartz-mercury vapor lamp available. Although the intense 0.365 μ line of this source falls within the zone of good effectiveness, insufficient energy passed through the illuminator. We have not studied the possible effect of the citrate buffer in screening the lower wave lengths, nor have we attempted to correct our data for the uncertain energy distribution of the carbon arc. Therefore, all we can say is that the light effect begins to be appreciable only at the edge of the visible spectrum, and this conclusion is confirmed as follows: Exposure of methylene white to daylight is much more effective when the solution is contained in quartz than in glass. Intense irradiation by monochromatic light of the visible region (e. g., yellow and green) is ineffective. Light from a carbon filament electric bulb which has little or no light of wave length shorter than 0.400 μ is ineffective, while light from a tungsten filament bulb, which has appreciable quantities of light of wave length in the zone about 0.380 μ, is effective by direct exposure.

Before it was found that methylene white is sensitive to the violet, we had been manipulating our apparatus by the light of tungsten filament lamps, and we are not sure that the absence of visible coloration can be regarded as proof that there did not take place changes too small for positive identification but large enough to have a significant part in cumulative errors. Indeed, our titration curves often have the form which would result from the presence of very small percentages of oxidant in a solution treated as if it were completely reduced.

In the preliminary paper by Clark (1920) it was shown that measurements of the methylene blue-methylene white system in neutral and alkaline solutions are rendered difficult by the slight solubility of the methylene white base. Rough estimates of the solubilities of this compound were made as follows: There was dissolved in 200 c. c. of water, 0.07 g. of methylene blue. This was filtered and then reduced with hydrogen and platinized asbestos. The reduced solution showed precipitated methylene white on the walls of the vessel and therefore must have been saturated with this compound at room temperature (about 28°). The solution was filtered into a nitrogen-protected burette and aliquots were titrated with 0.00025 molar solution of quinone. The solution in different experiments was found to be 0.00030 and 0.00035 molar. Of course, the solution prepared as above described must have been virtually acidified to a slight extent in the process of reduction.

Of more importance for present purposes are solubilities in buffer solutions. The experiment described above was repeated with proper titrating reagents, in the one case with buffer solution No. 5 as the solvent and again with buffer solution No. 22 as the solvent. In each case the temperature was about 25°. In buffer No. 5 the

acidity is such (pH 2.9) that according to our estimates of the dissociation constants, methylene white should form salts, while in buffer No. 22 (pH 8.6) only the free base could be present. The concentrations of methylene white at saturation were found to be 0.0005 to 0.0006 molar in solution No. 5 and 0.00002 molar in solution No. 22.

Such low solubilities definitely limit the range of experimental studies on homogeneous systems; and by forcing the investigator of such systems to use high dilutions, they magnify the possible effects of adsorption.

Everyone who has worked with methylene blue must have observed its very strong tendency to deposit on glass surfaces. Undoubtedly this withdrawal of oxidant from solution could be of appreciable effect in such studies as ours, but we have not investigated the matter because quantitative knowledge sufficient for our purposes would involve a study both of methylene white adsorption and of the still more difficult problem of the effects of adsorption on electrodes. We may note in passing that methylene white appears also to have a high adsorptive tendency. Recognizing the problem, we leave its quantitative significance in abeyance.

The considerable differences in the solubilities of methylene blue and methylene white at different acidities are correlated with those marked differences of these two compounds which will be discussed later. At present we shall simply note that since methylene blue must be classed as a "strong" electrolyte and methylene white as a "weak" electrolyte, we should expect to find anomalies when the data are treated by means of the classical methods. Indeed, if difficulties that we have already mentioned could be completely overcome, the system would provide excellent material for certain investigations on the difficult subject of "activities." Since the accuracy of the present measurements does not give assurance for an excursion from our elementary mode of presentation, we shall simply uncover the order of magnitude of the suggested secondary relations by showing on the one hand a "salt effect" and on the other a dilution effect.

For one experiment on the "salt effect" there were prepared solutions of the composition shown in Table 2. The pH values of the buffers diluted with water were measured and considered to be the same as those of the buffers diluted with the methylene blue-methylene white mixture. Since, as we shall show later, the potentials increase 0.0902 volt for each decrease of one unit of pH in this region, it is necessary to compare the observed electrode potentials E_h at a common pH. In this case, we took as a reference point pH 1.011. The last column of Table 2 shows the comparable values of $E_h + 0.0902 \times pH$.

TABLE 2.—*Effects of salt concentration and dilution on methylene blue potentials*

Solution	pH	Δ pH	Δ pH ×0.0902	E_h	E_h+Δ pH ×0.0902
50 c. c. C + 5 c. c. Me	1.011			0.4409	0.4409
50 c. c. C+10 c. c. Me	1.048	0.037	0.0033	.4335	.4368
50 c. c. C+15 c. c. Me	1.090	.079	.0071	.4280	.4351
50 c. c. B+ 5 c. c. Me	1.041	.030	.0027	.4363	.4390
50 c. c. B+10 c. c. Me	1.079	.068	.0061	.4301	.4362
50 c. c. B+15 c. c. Me	1.123	.112	.0101	.4253	.4354
50 c. c. A+ 5 c. c. Me	1.064	.053	.0048	.4332	.4380
50 c. c. A+10 c. c. Me	1.098	.087	.0079	.4280	.4359

A=0.1 M HCl, 0.1 M NaCl.
B=0.1 M HCl, 0.3 M NaCl
C=0.1 M HCl, 0.6 M NaCl
Me=partially reduced, aqueous, methylene blue (F) approximately 0.002 molecular before reduction.

It will be noticed that while there is an appreciable "salt effect," the dilution effect is much larger.

The order of magnitude of the "salt effect" here shown was confirmed by experiments with citrate solutions, and the dilution effect was shown more clearly in the following experiment. We have already mentioned a limit to the range over which concentration effects may be studied and the possibility that adsorption effects may upset calculations dealing with the very low concentrations we are forced to use. This will be remembered in considering the following remarkable data. A solution, the analysis of which proved to be 32 per cent oxidant, 68 per cent reductant, and 0.00083 molar with respect to total dye, was prepared in buffer No. 5 and added in successively increasing quantities to 50 c. c. of buffer No. 5. The potential was measured after each addition. Assuming no alteration of pH, there is a remarkable variation of potential with concentration of dye, as shown in Table 3, in which concentration is found in the first column and the averages of two closely agreeing sets of potential measurements are shown in the second column.

TABLE 3.—*Apparent effect of concentration of total dye on the potential of a fixed mixture of methylene blue and methylene white*

Concentration of total dye (molar)	Average E_h observed (volts)
0.000016	+0.2674
.000032	.2626
.000076	.2597
.000138	.2572
.000192	.2556
.000237	.2544
.000277	.2535
.000311	.2527
.000342	.2521
.000369	.2516
.000393	.2511
.000415	.2508

These data include a part of that range of concentration within which Holmes (1924) finds remarkable changes in the absorption of

light. In the paper referred to, Holmes raises several serious questions of interpretation which can not be adequately answered until several methods of study are focused upon the problem.

We had intended to include in this paper studies on various substitutions in the thiazine group of dyes. With commercial samples of toluidine blue, gentianine, and similar thiazines, we had made titanium-titrations according to the method of Clark (1920) and had reported the results at the New York meeting of the American Chemical Society (Cohen and Clark, 1921). But since materials of high purity would have to be used to obtain data on substitution comparable in accuracy with those obtained with indophenols (see previous papers, this series), it seemed hardly worth while to repeat the earlier work on various thiazines before there can be a thorough mastery of the preparation and control of this troublesome group of dyes.

On the other hand, a basic dissociation of Lauth's violet, the simplest thiazine, furnishes the key to the correlation of structure with electrode equation. Accordingly, significant data for the Lauth's violet system are presented.

IV. Buffer Solutions

In the composition of the buffer solutions some changes from the previous series were made. The new solutions are recorded in Table 4 and in subsequent tables will be referred to by number.

TABLE 4.—*Composition of buffer solutions*

Solution No.	Composition
1	250 c. c. M/5 NaCl+250 c. c. M/5 HCl+ 0 c. c. water.
2	250 c. c. M/5 NaCl+125 c. c. M/5 HCl+125 c. c. water
3	250 c. c. M/5 NaCl+ 30 c. c. M/5 HCl+220 c. c. water.
4	250 c. c. M/5 citric acid+ 50 c. c. M/5 NaOH+450 c. c. M/5 NaCl+250 c. c. water.
5	250 c. c. M/5 citric acid+125 c. c. M/5 NaOH+375 c. c. M/5 NaCl+250 c. c. water
6	250 c. c. M/5 citric acid+210 c. c. M/5 NaOH+290 c. c. M/5 NaCl+250 c. c. water.
7	250 c. c. M/5 citric acid+300 c. c. M/5 NaOH+200 c. c. M/5 NaCl+250 c. c. water.
8	250 c. c. M/5 citric acid+400 c. c. M/5 NaOH+100 c. c. M/5 NaCl+250 c. c. water.
9	250 c. c. M/5 citric acid+500 c. c. M/5 NaOH+ 0 c. c. M/5 NaCl+250 c. c. water
10	208 c. c. M/5 citric acid+500 c. c. M/5 NaOH+292 c. c. water
11	185 c. c. M/5 citric acid+500 c. c. M/5 NaOH+315 c. c. water
12	250 c. c. M/5 Na_2HPO_4+230 c. c. M/5 HCl+520 c. c. water.
13	250 c. c. M/5 Na_2HPO_4+190 c. c. M/5 HCl+560 c. c. water.
14	250 c. c. M/5 Na_2HPO_4+145 c. c. M/5 HCl+605 c. c. water.
15	250 c. c. M/5 Na_2HPO_4+100 c. c. M/5 HCl+650 c. c. water.
16	250 c. c. M/5 Na_2HPO_4+ 40 c. c. M/5 HCl+710 c. c. water.
17	250 c. c. M/5 Na_2HPO_4+ 15 c. c. M/5 HCl+735 c. c. water.
18	250 c. c. M/5 H_3BO_3+ 10 c. c. M/5 NaOH+490 c. c. M/5 NaCl+250 c. c. water.
19	250 c. c. M/5 H_3BO_3+ 16 c. c. M/5 NaOH+484 c. c. M/5 NaCl+250 c. c. water.
20	250 c. c. M/5 H_3BO_3+ 30 c. c. M/5 NaOH+470 c. c. M/5 NaCl+250 c. c. water.
21	250 c. c. M/5 H_3BO_3+ 55 c. c. M/5 NaOH+445 c. c. M/5 NaCl+250 c. c. water.
22	250 c. c. M/5 H_3BO_3+ 80 c. c. M/5 NaOH+420 c. c. M/5 NaCl+250 c. c. water.
23	250 c. c. M/5 H_3BO_3+160 c. c. M/5 NaOH+340 c. c. M/5 NaCl+250 c. c. water.
24	250 c. c. M/5 H_3BO_3+240 c. c. M/5 NaOH+260 c. c. M/5 NaCl+250 c. c. water.
25	125 c. c. M/5 Na_2HPO_4+ 40 c. c. M/5 NaOH+210 c. c. M/5 NaCl+625 c. c. water.
26	125 c. c. M/5 Na_2HPO_4+ 90 c. c. M/5 NaOH+160 c. c. M/5 NaCl+625 c. c. water.
27	125 c. c. M/5 Na_2HPO_4+150 c. c. M/5 NaOH+100 c. c. M/5 NaCl+625 c. c. water.
28	250 c. c. M/5 NaOH+250 c. c. M/5 NaCl+500 c. c. water.
29	250 c. c. M/5 NaOH+750 c. c. water.
30	250 c. c. M/5 NaOH+250 c. c. water.

V. Electrode Measurements on Lauth's Violet

In Table 5 are the results of two series of measurements on Lauth's violet by the method of mixtures. A saturated aqueous solution of Lauth's violet was filtered and divided into two portions. One was de-aerated and the other reduced with hydrogen and platinized asbestos. These two solutions were then added in the ratios shown, so that a total of 5 c. c. of oxidant and reductant was held in 50 c. c. of buffer solution. Assuming no effect of this small amount of dye solution on the pH, the pH of the dye-free buffer + 5 c. c. of water, which was found to be 2.867, was considered to be the value for the mixture.

TABLE 5.—*Mixtures of equimolecular solutions of Lauth's violet and its reduction product. In buffer of pH 2.867*

Ratio $\frac{[S_r]}{[S_o]}$	E_h	E'_o
$\frac{60.8}{39.2}$	+0.2986	0.3043
$\frac{60}{40}$	.3000	.3053
$\frac{50}{50}$	.3040	.3040
$\frac{40}{60}$	.3088	.3035
	.3091	.3038

Average, 0.3042

In Table 6 are the data on a titration of reduced Lauth's violet with benzoquinone. It will be understood from what has already been said that the end point is somewhat uncertain, that consequently the point taken is to some degree uncertain, and that corrections for change in pH can not be made with assurance.

We shall assume for pH 2.867, the value $E'_o = 0.305$.

TABLE 6.—*Titration of reduced Lauth's violet (GB) with benzoquinone at pH 2.867*

Quinone (c. c.)	Oxidation (per cent)	$0.03006 \log \frac{[S_r]}{[S_o]}$	E_h	E'_o	Deviation from 0.3052
1	8.77	+0.0306	0.2771	0.3077	+0.0025
2	17.54	.0202	.2859	.3061	+.0009
3	26.32	.0134	.2920	.3054	+.0002
4	35.09	.0080	.2973	.3053	+.0001
5	43.86	+.0032	.3020	.3052	.0000
6	52.63	−.0014	.3066	.3052	.0000
7	61.40	−.0061	.3113	.3052	.0000
8	70.17	−.0112	.3169	.3057	+.0005
9	78.94	−.0173	.3235	.3062	+.0010
10	87.72	−.0257	.3336	.3079	+.0027
11	96.50	−.0433	.3566	.3133	+.0081
11.4	100.00				

In Tables 7 and 8 are summarized measurements made upon fixed mixtures of oxidant and reductant in solutions of different pH values. As has been our custom, we have reduced the data to E'_0 values for the convenience of the reader, and to do this have made measurements in each series with solution No. 5 for which at pH 2.867 we have already selected the E'_0 value of 0.305. Since it was necessary to operate with the oxidant predominating and upon the "0.09 slope" of the E_h: pH curve an experimental error is to be expected in reducing the original data to E'_0 values, and, indeed, there appears a discrepancy between Tables 7 and 8 revealed by the predominating negative deviations of Table 8. Evidently undue weight was given to one orienting value in either Table 7 or 8, and since the reduction to E'_0 values has no weight in determining K_{r2}, K_{r3}, K_{ob}, and the slopes of the several sections of the curve, we have made an arbitrary constant correction of the deviations in Table 8 which gives a fairer picture of the alignment of the experimental data (exclusive of one orienting experiment) with the calculated curve.

TABLE 7.—*Lauth's violet. Relation of E'_0 to pH. First series*

[$E'_{pH\,0}=0.563$; $Kr_2=5\times10^{-3}$; $Kr_3=4.2\times10^{-5}$, $K_{ob}=1.88\times10^{-3}$]

Solution No.	pH	E'_0 calc.	E'_0 found	Deviation
1	1.076	+0.466	+0.465	−0.001
2	1.369	.440	.437	−.003
3	1.982	.384	.384	.000
4	2.441	.343	.339	−.004
5	2.867	.305	.303	−.002
6	3.340	.263	.261	−.002
7	3.864	.218	.218	.000
8	4.396	.177	.178	+.001
9	4.901	.144	.145	+.001
10	5.477	.115	.115	.000
11	5.896	.098	.098	.000
12	5.896	.098	.099	+.001
13	6.333	.083	.083	.000
14	6.662	.072	.072	.000
15	6.967	.063	.062	−.001
16	7.517	.046	.045	−.001
17	7.844	.036	.031	−.005
18	7.493	.047	.046	−.001
19	7.691	.041	.040	−.001
21	8.393	+.020	+.021	+.001
23	9.238	−.006	−.006	.000
26	12.115	−.127	−.123	+.004
30	12.589	−.154	−.149	+.005

TABLE 8.—*Lauth's violet. Relation of E'_0 to pH. Second series*

[$E'_{pH\,0}$=0.563; Kr_2=5×10^{-6}; Kr_1=4.2×10^{-6}; K_{ob}=1.88×10^{-9}]

Solution No.	pH	E'_0 calc.	E'_0 found	Deviation	Deviation corrected
1	1.073	0.466	0.457	−0.009	−0.006
3	1.978	.385	.379	−.006	−.003
5	2.872	.305	.302	−.003	.000
6	3.344	.263	.263	.000	+.003
7	3.828	.221	.222	+.001	+.004
8	4.377	.178	.180	+.002	+.005
9	4.919	.143	.142	−.001	+.002
10	5.482	.114	.114	.000	+.003
11	5.911	.098	.095	−.003	.000
13	6.351	.082	.079	−.003	.000
15	6.971	.063	.059	−.004	−.001
16	7.517	.046	.043	−.003	.000
17	7.965	.033	.030	−.003	.000
20	8.055	.030	.026	−.004	−.001
21	8.396	+.020	+.018	−.002	+.001
23	9.241	−.006	−.011	−.005	−.002
24	10.129	−.034	−.039	−.005	−.002
25	10.989	−.067	−.072	−.005	−.002
26	11.455	−.090	−.092	−.002	+.001
27	11.759	−.106	−.110	−.004	−.001
28	12.273	−.136	−.138	−.002	+.001
30	12.293	−.137	−.136	+.001	+.004

VI. Electrode Measurements on Methylene Blue

Sample A, by the method of mixtures, gave the data of Table 9, and titration with quinone of the reduced solution gave the data of Table 10. A repetition of this experiment gave essentially the same picture.

TABLE 9.—*Methylene blue (sample A). Mixtures of oxidant and reductant at pH 2.859*

[Total oxidant and reductant approximately 0.0001 molar]

	First series		Second series	
Ratio $\frac{[S_r]}{[S_o]}$	E_h	E'_0	E_h	E'_0
$\frac{70}{30}$	0.2625	0.2736		
$\frac{60}{40}$	.2681	.2734	0.2679	0.2732
$\frac{50}{50}$	.2724	.2724	.2728 .2728	.2728
$\frac{40}{60}$	.2777	.2724	.2781	.2728
$\frac{30}{70}$	.2830	.2719		

Average ....+0.2727 ....+0.2729
$E'_{pH\,0}$ ....+ .5306 ....+ .5308

TABLE 10.—*Titration of reduced methylene blue (sample A) with benzoquinone at pH 2.859*

Quinone (c. c.)	Oxidation (per cent)	$0.03006 \log\frac{[S_r]}{[S_o]}$	E_h	E'_0	Deviation from 0.2730
1	6.45	0.0349	0.2395	0.2744	+0.0014
2	12.90	.0250	.2491	.2741	+.0011
3	19.36	.0186	.2555	.2741	+.0011
4	25.81	.0138	.2601	.2739	+.0009
5	32.26	.0097	.2640	.2737	+.0007
6	38.71	.0060	.2674	.2734	+.0004
7	45.17	+.0025	.2705	.2730	.0000
8	51.61	−.0008	.2738	.2730	.0000
9	58.06	−.0042	.2772	.2730	.0000
10	64.52	−.0078	.2807	.2729	−.0001
11	70.97	−.0117	.2845	.2728	−.0002
12	77.42	−.0161	.2888	.2727	−.0003
13	83.87	−.0215	.2942	.2727	−.0003
14	90.33	−.0292	.3013	.2721	−.0009
15.5	100				
Average				+0.2730	
$E'_{pH\,0}$				.5309	

Sample B in preliminary measurements seemed very unsatisfactory and was rejected for electrode measurements.

Sample C gave, on titration of the reduced solution with quinone, an estimated end point at 15.87 c. c. When this value was used, the E'_0 values calculated from the observed potentials are those of the second column of Table 11.

TABLE 11.—*Methylene blue (sample C). E'_0 values calculated from quinone-titration at pH 2.863*

[Methylene blue approximately 0.0001 molar]

Quinone (c. c.)	E'_0	Quinone (corrected) c. c.	E'_0 corrected
1	0.2779	1.4	0.2776
2	.2767	2.4	.2743
3	.2759	3.4	.2743
4	.2756	4.4	.2744
5	.2752	5.4	.2742
6	.2749	6.4	.2740
7	.2746	7.4	.2739
8	.2746	8.4	.2739
9	.2745	9.4	.2739
10	.2744	10.4	.2738
11	.2743	11.4	.2738
12	.2742	12.4	.2738
13	.2747	13.4	.2743
14	.2750	14.4	.2746
15.87		16.27	
Average			0.2741
$E'_{pH\,0}$			=0.5323

Such a distribution of values is much like that which would occur were the titration begun on a solution already partially oxidized. The solution had been fairly well protected from light and appeared colorless when delivered to the faintly illuminated burette. However, if we assume about 2.5 per cent initial oxidation and correct for this by assuming that the equivalent of 0.4 c. c. quinone was already

present, we obtain the E'_0 values of the last column of Table 11. Allowing for minor corrections of acidity change, which would have to be made to perfect any such series of values, the agreement seems reasonable.

A subsequent repetition of the quinone titration on sample C gave—E'_0 uncorrected average 0.2756, and corrected, 0.2745, or $E'_{pH\,0}=0.533$.

Measurements on mixtures of oxidant and reductant at pH 2.863 gave the data of Table 12.

TABLE 12.—*Methylene blue (sample C). Mixtures of oxidant and reductant at pH 2.863*

[Total oxidant and reductant approximately 0.0001 molar]

Ratio $\frac{[S_r]}{[S_o]}$	E_h	E'_0	Ratio $\frac{[S_r]}{[S_o]}$ corrected	E'_0 corrected
$\frac{60}{40}$	0.2692	0.2745	$\frac{58.5}{41.5}$	0.2737
$\frac{50}{50}$	.2745	.2745	$\frac{48.75}{51.25}$	.2738
$\frac{40}{60}$	.2789	.2736	$\frac{38.8}{61.2}$	.2730
	Average	+0.2742		+0.2735
	$E'_{pH\,0}=$	+0.5324		+0.5317

In the last two columns of Table 12 are given the results of corrections for the 2.5 per cent oxidant in the reductant assumed to correct the quinone titration of the same sample.

Sample E on titration with quinone gave a series of E'_0 values with graphic mid-point at 0.276, which became reasonably concordant with 0.2739 ($E'_{pH\,0}=0.531$) (see Table 13) when an end-point at 2 c. c. less than that judged by graphic inspection of the original data was selected. This suggested the presence of reducing impurity active in the zone intermediate between the methylene blue system and the quinone system. Comparable data obtained by the method of mixtures also showed deviations which could be interpreted as due to presence of a reducing impurity in the oxidant. A quinone titration of the sample definitely disclosed the presence of a reducing substance which had, strangely enough, survived air exposure and which was sufficient to account for the above discrepancies.

TABLE 13.—*Titration of reduced methylene blue (sample E) with benzoquinone at pH 2.849*

[Methylene blue approximately 0.00009 molar]

Quinone (c. c.)	Oxidation (per cent)	0 03006 log $\frac{[S_r]}{[S_o]}$	E_h	E'_o	Deviation from 0.2730
2	8.70	0.0307	0.2418	0.2725	−0.0014
3	13.04	.0248	.2483	.2731	−.0008
4	17 39	.0203	.2530	.2733	−.0006
5	21.74	.0167	.2568	.2735	−.0004
6	26.09	.0136	.2601	.2737	−.0002
7	30.43	.0108	.2630	.2738	−.0001
8	34.78	.0082	.2656	.2738	−.0001
9	39.13	.0058	.2679	.2737	−.0002
10	43.48	.0034	.2703	.2737	−.0002
11	47.83	+.0011	.2727	.2738	−.0001
12	52.18	−.0011	.2750	.2739	.0000
13	56.52	−.0034	.2773	.2739	.0000
14	60.87	−.0058	.2797	.2739	.0000
15	65.22	−.0082	.2821	.2739	.0000
16	69 57	−.0108	.2847	.2739	.0000
17	73 91	−.0136	.2876	.2740	+.0001
18	78.26	−.0167	.2908	.2741	+.0002
19	82.61	−.0203	.2945	.2742	+.0003
20	86.96	−.0248	.2991	.2743	+.0004
21	91.31	−.0307	.3046	.2739	.0000
22	95 65	−.0403	.3122	.2719	−.0020
23	100 00		.3250		

$E'_{pH\,0} = 0.5309$

Sample F.—By the method of mixtures at pH 2.851 (solution No. 5), there were found the relations seen in Table 14.

A titration of the reduced solution with quinone gave a series of E'_0 values, varying in a more or less orderly fashion. Graphically, we estimate the mid-point of the titration curve to be 0.276, giving $E'_{pH\,0} = 0.534$. The average of the two measurements is 0.533.

TABLE 14.—*Methylene blue (sample F). Mixtures of oxidant and reductant at pH 2.851*

[Total oxidant and reductant approximately 0.00009 molar]

Ratio $\frac{[S_r]}{[S_o]}$	E_h	E'_o
$\frac{60}{40}$	0.2712 .2711	0.2765 .2764
$\frac{50}{50}$	.2760 .2757	.2760 .2757
$\frac{40}{60}$	.2804 .2800	.2751 .2747

Average .... +0.2757
$E'_{pH\,0}$ .... = +0.5329

Sample G, by the method of mixtures at pH 2.851, gave the values shown in Table 15.

Quinone titration of this sample gave uniformly varying values of E'_0 which we were not able to interpret. Graphically, a mid-point was estimated at 0.277, giving $E'_{pH\,0} = 0.534$.

Table 15.—*Methylene blue (sample G). Mixtures of oxidant and reductant at pH 2.851*

[Total oxidant and reductant approximately 0.00006 molar]

Ratio $\frac{[S_r]}{[S_o]}$	E_h	E'_0
$\frac{60}{40}$	0.2723	0.2776
$\frac{50}{50}$	.2774	.2774
$\frac{40}{60}$	.2813, .2815	.2761

Average 0.2770
$E'_{pH\,0}$ = ... 0.5342

Sample H was found too impure to work with.

Sample I was found by titration to be grossly impure. It should here be noted that commercial grades of methylene blue suitable for staining need not be, and perhaps are preferably not, pure methylene blue. (Compare Scott and French, 1924.)

Sample J, which was sample F extracted with chloroform and ether, was titrated with benzoquinone and gave the same type of deviation observed with sample F and a graphically estimated mid-point identical with that found for F at the same pH.

Sample K gave a peculiar titration curve difficult to interpret but surely indicative of some impurity.

In brief summary, we have the better values for the potentials of an equimolecular mixture reduced for convenience of comparison to the values at pH = 0 ($E'_{pH\,0}$) which are assembled in Table 16. Of these, the most consistent are the values for sample A. In the case of sample E the presence of the reducing impurity, of which there was direct experimental evidence, would interfere with the determination of an E'_0 value by the method of mixtures, but it need not necessarily injure seriously the results of a quinone titration if the impurity becomes active only near the close of the titration and if we correct for the end-point from internal evidence. If the end-point correction (which was made solely to characterize the first, larger section of the titration) be allowed, it turns out that the constant for sample E is remarkably close to that of sample A.

Table 16.—*Methylene blue. Summary of values for $E'_{pH\,0}$*

Sample	Method of mixtures		Quinone titration		
	Observed	Corrected for impurity	Graphic estimate	Calculated in detail	Corrected for impurity
A	0.5306, .5308			0.5309	
C	.5324	0.5317			0.5323
E			0.533		.5309
F	.5329		.534		
G	.5342	[illegible]	.534		
Average	.5322	.5317	.534	.5309	.5316

Some of the measurements were made before the effect of dilution was fully realized (see p. 1144), and consequently the data as they accumulated were data for somewhat different concentrations. However, on looking back over our notes we find that the variations in concentration were certainly not of sufficient magnitude to account for the discrepancies of Table 16.

A tempting hypothesis which we considered is this: Having shown that certain characteristic potentials for methylene blue are distinctly lower than those of Lauth's violet, we might assume that undermethylated preparations would show intermediate values. We would then expect that a pure methylene blue would give not only the most negative potential but the most uniform sets of data as are found for instance with sample A, while samples containing undermethylated products as impurity would give variable and more positive potentials as are actually found with the other samples. Against this hypothesis stands a titration we made of a commercial preparation reported to us on the basis of spectrophotometric data as a distinctly undermethylated product. In comparison with sample A, it gave distinctly more negative values. We then obtained from Dr. W. J. MacNeal a sample of his beautifully crystalline "dimethyl thionin." On titration this gave a peculiar series of deviations *suggestive* of a small percentage of some active impurity. However, the graphic mid-point at pH 2.83 was $+0.268$, or $E'_{pH\,0} = +0.523$, which, by inspection of Table 16, indicates again a displacement in the direction opposite to that expected from the hypothesis suggested above.

These comparative data might appear conclusively to militate against the hypothesis proposed above; but, as we have emphasized in previous papers, it is dangerous to interpret substitution effects before dissociation constants are known. We shall show presently that in acid solutions, where alone it is feasible to make measurements of the type now under consideration, we are on a "0.09-slope" of the E'_0:pH curve which is comparable to a similar slope of the indophenols. Inspection of Figure 1 of the sixth paper of this series will suggest the danger we now note. In the present instance we have not completely defined each system because we saw no use in developing the refined aspects of the subject with material of dubious purity. Consequently the hypothesis that discrepant results with different samples of methylene blue are due to undermethylated impurities must be left undecided until the effects of dissociation upon the position of the curve having the "0.09-slope" are determined.

In Tables 17 and 18 are summarized measurements made with fixed mixtures of oxidant and reductant (corrected to an equimolecular mixture) introduced into buffers of different pH values.

Here again it will be seen that the data are not so concordant as those obtained with other types of compound; but that the essential features of the relations are fairly clear will be seen from Figure 3, where the data of Table 17 are shown as dots, and supplementary data from Table 18 are shown as circles.

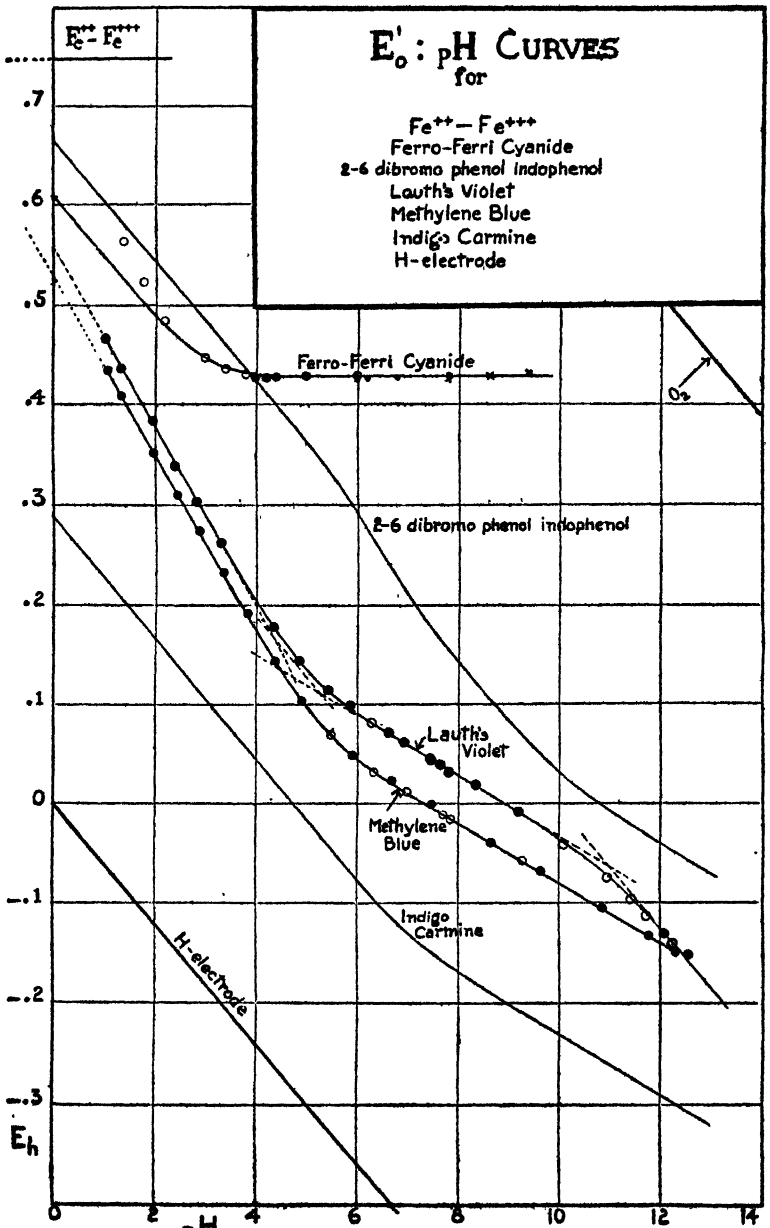


FIG. 3

In this figure we have extended the "0.09-slope" of the curve to pH=0, since preliminary measurements at high acidities indicated that this extension could be made. There is, however, an apparent deviation in 3N HCl, which may mean either that the curve tends to return to the "0.06-slope" or that our preliminary measurements were wrongly interpreted through our failure up to this point adequately to allow for relative activities.

TABLE 17.—*Methylene blue. Relation of E'_0 to pH. First series*

[$E'_{pH\,0}=0.532$; $Kr_2=1.4\times10^{-6}$; $Kr_3=3\times10^{-5}$]

Solution No.	pH	E'_0 calculated	E'_0 found	Deviation
1	1.07	0.435	0.436	+0.001
2	1.37	.409	.409	.000
3	1.98	.353	.353	.000
4	2.45	.311	.311	.000
5	2.88	.273	.275	+.002
6	2.36	.230	.233	+.003
7	3.84	.188	.192	+.004
8	4.39	.144	.145	+.001
9	4.92	.105	.105	.000
11	5.92	.051	.051	.000
14	6.67	+.022	.024	+.002
16	7.48	−.004	.000	+.004
22	8.62	−.039	−.040	−.001
23 1/2	9.61	−.069	−.068	+.001
25	10.82	−.105	−.103	+.002
27	11.74	−.133	−.132	+.001
30	12.28	−.149	−.149	.000

TABLE 18.—*Methylene blue. Relation of E'_0 to pH. Second series*

[$E'_{pH\,0}=0.532$; $Kr_2=1.4\times10^{-6}$; $Kr_3=3\times10^{-5}$]

Solution No	pH	E'_0 calculated	E'_0 found	Deviation
1	1.08	0.435	0.437	+0.002
2	1.37	.409	.409	.000
4	2.45	.312	.311	−.001
5	2.88	.273	.275	+.002
6	3.34	.232	.235	+.003
7	3.86	.186	.188	+.002
8	4.40	.143	.145	+.002
9	4.90	.107	.107	.000
10	5.48	.072	.071	−.001
11	5.90	.052	.050	−.002
13	6.33	.034	.033	−.001
14	6.66	.022	.024	+.002
15	6.97	+.012	+.014	+.002
16	7.49	−.005	−.003	+.002
17	7.84	−.016	−.016	.000
19	7.69	−.011	−.011	.000
23	9.24	−.058	−.057	+.001

We hope that this account of our experience with methylene blue will be helpful to someone who shall overcome the difficulties and establish more accurately the fundamental constants of the system.

After this our third series of measurements, with experience gained by studies of other systems, we are convinced that our failure to obtain concordant data of the order of agreement found in our studies of other systems is due in large measure to the inherent peculiarities of this unstable, adsorbing, polar compound, with its difference in structural type from the light-sensitive, slightly soluble reductant. Indeed not only the difficulties encountered but peculi-

arities which are suggested by experiments supplementary to the main course of experimentation, such as the dilution effect and its correlation with Holmes' observations, make it appear that methylene blue, in spite of its popularity, will ultimately be rejected from lists of oxidation-reduction indicators destined for precise use. But for the present, numerous applications of this indicator remain to be clarified, and for this purpose our data are certainly adequate.

VII. Electrode Equation

With the experimental data before us, we come to their formulation in accordance with the principles outlined in the second paper of this series.

Since the Lauth's violet system displays an inflection of the E'_0:pH curve (fig. 3) in alkaline regions which the methylene blue system does not, it furnishes the more complete picture. Therefore the following interpretation will be made with the aid of data on Lauth's violet:

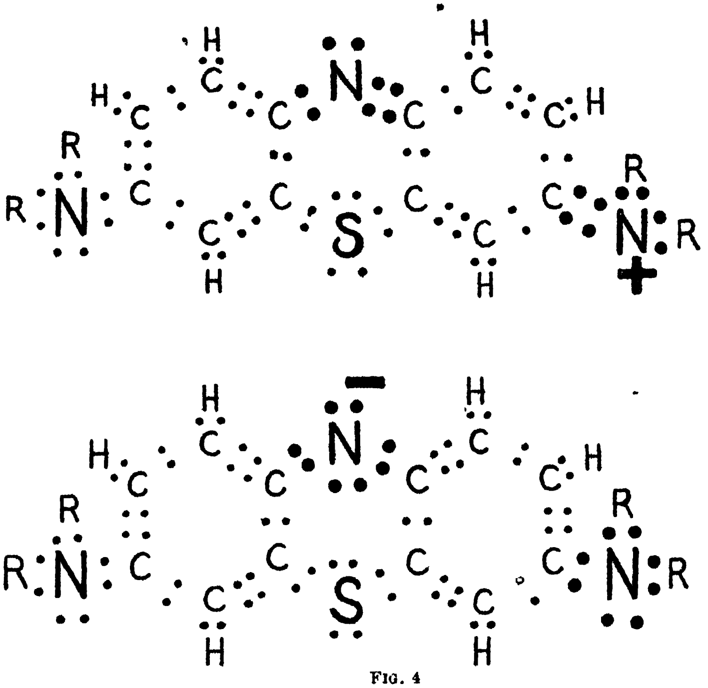
The E'_0:pH curve of Lauth's violet (fig. 3) appears to have characteristics distinct from those of the dyes reported in previous papers of this series. In the acid region, the value of $\frac{-dE}{dpH}$ is 0.0902, which we shall call the "0.09-slope." While such a value was discovered among the indophenols, and was especially distinct in the case of 2, 6-dibromophenol indophenol, it had no such extension as is found in the data on the thiazines.

In Lauth's violet, the "0.09-slope" abruptly changes to a "0.03-slope" near pH 5; and since two electrons or their equivalent are concerned in the reduction process making the $\frac{RT}{nF}$ coefficient 0.03, this change of 0.06 (i. e., 2 × 0.03) indicates that two acid-base dissociations are encountered in this pH region. The two dissociation constants concerned are obviously not identical, because the actual inflection of the curve is not nearly so abrupt as would be the case were they identical. Do both of these constants represent ionizable groups created or destroyed in the act of reduction? If they do, we still leave unaccounted for a third group made apparent by the change from a "0.03 slope" to a "0.06-slope" at pH 11.

Since the electrometric data reveal *directly* little regarding the nature or the location of the acid-base groups encountered, it is possible to express the experimental data by a number of equations derived in accordance with the principles outlined in the second paper of this series. Without claiming to have exhausted the possibilities, we have constructed several such equations which express the experimental data well enough, but which call for bizarre chemical properties in the thiazines. But by adopting the following

rational development, we have reached a result which seems satisfactory from every viewpoint.

We shall assume that Bernthsen's (1883–1889) formula for the thiazines, supported as it is by a clever and extensive array of syntheses, is essentially correct, and we shall then write this formula in accordance with the octet theory of electronic configuration. We then have for a thiazine, Formula I, and for its reductant, Formula II, of Figure 4.



I

II

FIG. 4

It will be particularly noted that the double-bonded, terminal nitrogen of Formula I contributes but four electrons to the surrounding octet, while it has five positive charges reserved for its outer shell. Consequently this group has a distinct polar valence comparable with that of ammonium. On reduction, this polar valence is destroyed and at the same time a potential anion is created at the bridging nitrogen as in the case of the indophenols.

The oxidation-reduction process may therefore be expressed in the following form

$$Ox^+ + 2e \leftrightharpoons \bar{R}ed$$

and the corresponding electrode equation is[1]

$$E_h = C - \frac{RT}{2F} \, ln \, \frac{[R\bar{e}d]}{[Ox^+]} \qquad (1)$$

[1] See first and second papers of this series.

Next, in summing the various species of oxidant and reductant to obtain the equation embodying total oxidant, $[S_o]$, and total reductant, $[S_r]$, we shall have to take into consideration the experimental fact that three changes in steps of 0.03 are found in the slopes of the E'_o: pH curve, indicating that three dissociation constants are to be considered. In addition, there are potentially active groups which it may be well to consider.

Since we shall have to deal with basic groups and, for the sake of uniformity, desire to deal with hydrion rather than hydroxyl ion concentrations, we shall find the first section of our derivation simplified if we adopt Brönsted's (1923) extension of Michaelis' (1922) formulation of acid-base equilibria.

Brönsted unifies the representation of acid-base equilibria by the expression: acid $\leftrightarrows$ base + H^+. Specific cases are:

$$\underset{\text{(acid)}}{\text{acetic acid}} \leftrightarrows \underset{\text{(base)}}{\text{acetate ion}} + H^+$$

$$NH_4^+ \leftrightarrows \underset{\text{(base)}}{NH_3} + H^+$$

The group RNH_2 may be treated as if it acquired basic properties either by addition of water and subsequent ionization of hydroxyl or by direct addition of hydrion. It is therefore immaterial to the present formalistic treatment whether we use the ordinary K_b dissociation constants or K_a constants, so long as we retain the relation $K_a = \frac{K_w}{K_b}$. We shall use either constant in accordance with convenience and shall later summarize with the customary K_b symbols.

In the following summations we shall regard each represented species as equivalent to the sum of hydrated and unhydrated molecules of the same species. For the reductant, the sum $[S_r]$ of all species is

$$[S_r] = [\overset{-}{\text{Red}}] + [\text{H Red}] + [\text{H}_2\overset{+}{\text{Red}}] + [\text{H}_3\overset{++}{\text{Red}}] \qquad (2)$$

$$\frac{[\overset{-}{\text{Red}}]\,[H^+]}{[\text{H Red}]} = K_{r1} \qquad (3)$$

$$\frac{[\text{H Red}]\,[H^+]}{[\text{H}_2\overset{+}{\text{Red}}]} = K_{r2} \qquad (4)$$

$$\frac{[\text{H}_2\overset{+}{\text{Red}}]\,[H^+]}{[\text{H}_3\text{Red}^{++}]} = K_{r3} \qquad (5)$$

In the oxidant, the group $>C{=}NH_2^+$ can be brought into Brönsted's formalistic scheme, but it is more realistic to treat it as a cation, adding the hydroxyl ion directly. Hence

$$[S_o] = [\overset{+}{Ox}] + [OxOH] \tag{6}$$

$$\frac{[\overset{+}{Ox}]\,[\overset{-}{OH}]}{[OxOH]} = K_{ob} \tag{7}$$

or, since we wish to use $[H^+]$

$$\frac{[\overset{+}{Ox}]\,K_w}{[H^+]\,[OxOH]} = K_{ob} \tag{7a}$$

Solving equations (2) to (7a) for $[\overset{+}{Ox}]$ and $[\overset{-}{Red}]$, substituting in (1) and collecting constants, we then have (8) in its numerical form for 30° C.:

$$E_h = E_o - 0.03006 \log \frac{[S_r]}{[S_o]} - 0.03006 \log \frac{K_{ob}[H^+] + K_w}{K_{r1}K_{r2}K_{r3}[H^+] + K_{r2}K_{r3}[H^+]^2 + K_{r3}[H^+]^3 + [H^+]^4} \tag{8}$$

Without further discussion, we shall assume that the bridging nitrogen fixes H^+ as was assumed for the indophenols. Consequently, Kr_1 has a value so low that the term in which it occurs can be neglected, and (8) becomes (9):

$$E_h = E_o - 0.03006 \log \frac{[S_r]}{[S_o]} - 0.03006 \log \frac{K_{ob}\,[H^+] + K_w}{K_{r_2}K_{r3}[H^+]^2 + K_{r3}[H^+]^3 + [H^+]^4} \tag{9}$$

In previous studies, the equations used for the construction of the calculated E'_o : pH curves were all of such form that when $\frac{[S_r]}{[S_o]} = 1$ and $[H^+] = 1$ normal, the neglect of second order magnitudes gave $E'_o = E_o$. On the assumption that no essential change would occur when $\frac{[S_r]}{[S_o]} = \frac{\text{normal}}{\text{normal}}$, the E_o found with *dilute* solutions under the above conditions could be called the "normal potential." In the present instance (equation 9) it will be noted that when $[H^+] = 1$ and $\frac{[S_r]}{[S_o]} = 1$, the neglect of second order values in applying the values of the constants to be given later leaves

$$E'_o = E_o - 0.03006 \log K_{ob}$$

This peculiarity arises from the fact that we have assumed both hydroxyl and hydrogen ions to be concerned, and obviously we would have met a similar situation had we continued with the same assumption and chosen to formulate the equation in terms of hydroxyl ion concentrations instead of hydrion concentrations. In short, it is necessary to remember the formalistic nature of "normal potential" and, as has frequently been noted, to define clearly the sense in which the expression is used. Indeed, had we chosen the perfectly legitimate procedure of including both hydroxyl and hydrion concentra-

tions in our equation, the term "normal potential" would become nonsense. We shall, therefore, retain our E_o in its mathematical meaning as defined by specific equations. For potentials at pH = 0 we shall use the symbol $E_{pH\,0}$, and for the half reduced solution at pH 0, the symbol $E'_{pH\,0}$.

VIII. Dissociation Constants

Since we ascribe a polar valence to the "double-bonded" terminal nitrogen and discover in Lauth's violet an inflection of the E'_o:pH curve at pH 11, we shall give to $\frac{K_w}{K_{ob}}$ a value of 10^{-11}. Tentatively accepting the value 1.88×10^{-14} for K_w at 30° as given by Michaelis (1922) we find $K_{ob} = 1.88 \times 10^{-3}$.

It will have been noted that we have left out of consideration a second group of potentially basic properties in the oxidant. Were this group active, forming the cation $\overset{++}{\mathrm{OxH}}$ within the experimental range of pH, we would have found at some pH-zone lower than that in which the "0.03-slope" occurs an inflection of the curve tending toward "zéro slope." The inflections observed are in the opposite direction. Consequently, we can conclude that the basicity of the amino group in the oxidant is so "weak" that for all practical purposes it can be left out of account with resulting simplification of the equation. The inflections found must then be ascribed to ionizations of the two remaining groups of the *reductant*. The constants for these groups are represented by K_{r_2} and K_{r_3}.

In determining the values of K_{r_2} and K_{r_3} it is helpful to use the intersection of the projections of the so-called "0.09-" and "0.03-slopes." Those sections of the curve which are found at the region concerned are (when considered independently) determined by equations (10) to (12).

$$-E_1 = 0.03006 \log \frac{1}{K_{r_2}K_{r_3}} + 0.03006 \text{ pH} - C \qquad (10)$$

$$-E_2 = 0.0601 \log \frac{1}{K_{r_3}} + 0.0601 \text{ pH} - C \qquad (11)$$

$$-E_3 = 0.0902 \text{ pH} - C \qquad (12)$$

Equation (10) determines the "0.03-slope" and (12) the "0.09-slope"; while (11) determines the "0.06-slope" between these two limbs, which in the present case is obscured.

The intersection of (10) and (12) occurs at $E_1 = E_3$, or when $\log \frac{1}{K_{r_2}K_{r_3}} = 2 \times \text{pH}$.

Graphically we estimate the intersection to be at about pH = 4.9 (fig. 3). Hence, $\log \frac{1}{K_{r_2}} + \log \frac{1}{K_{r_3}} = 9.8$.

By subsequent trial we find that $\log \frac{1}{K_{r2}} = 5.3$, and $\log \frac{1}{K_{r3}} = 4.38$ (sum 9.68, intersection 4.84) fit the data fairly well. Hence we shall use $K_{r2} = 5 \times 10^{-6}$ and $K_{r3} = 4.2 \times 10^{-5}$.

With the values of K_{ob}, K_{r2}, and K_{r3} described above, $K_w = 1.88 \times 10^{-14}$, and the E'_{pH_0} previously discussed we obtain with equation (9) the calculated E'_0:pH curve shown in Figure 3 (E'_0 being the value of an equimolecular mixture at any given value of pH).

It was mentioned above that the section of the E'_0:pH curve having a "0.09-slope" is comparable to the same slope found among the indophenols. In the latter case it occurred between two "0.06-slopes" and was accounted for by two dissociations, one of the oxidant and the other of the reductant the pK values of which were distinctly different. It is now evident that the same explanation holds for the thiazines, the "0.09-slope" lying between the region of ionization of a group in the oxidant so weak that its K_b value is negligible and the region of an appreciable ionization of that same group as it appears in the reductant.

Turning now from Lauth's violet to methylene blue, we can apply the same principles, and with the exception of the new values of the constants employed, the only essential difference is the absence of an inflection of the curve in the alkaline region. This simply means that in methylene blue the value of K_{ob} is too large to permit suppression of its basic ionization by the alkaline buffers employed.

Summarizing, and using for descriptive purposes the more familiar basic ionizations shown in Table 19 rather than the corresponding acid constants employed for convenience in developing equations, we have the following concept.

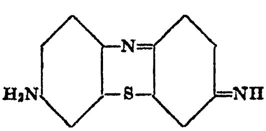
Among the thiazines, the oxidant is a strongly polar cation, comparable to a substituted ammonium, NH_4^+. As the substitution of alkyl groups for hydrogen enhances the basicity of ammonium, so we should expect methylene blue to be a stronger base than Lauth's violet. In Lauth's violet we find a color change occurring in the zone of pH 11 and correlating with the dissociation constant determined by the inflection of the E'_0:pH curve. The precipitate there formed was identified as the free base by Bernthsen (1885). On the other hand, much more intense alkalinization is required to induce a color change in methylene blue, and its free base was obtained by Bernthsen (1885) only by the use of silver oxide. We may therefore conclude that in "strength" methylene blue cation is comparable to sodium ion. Its chloride has been found by the conductivity measurements of Jaubert (1895) to compare with NaCl. Pelet-Jolivet and Wild (1908) regard it as completely dissociated in dilute solution. Hantzsch and Osswald (1900) say of the thiazines that in spite of their complex structure and high molecular weight they should be classed with the strongest bases.

TABLE 19.—*Ionization constants, inflections of E'_0:pH curves, and characteristic potentials at pH 0*

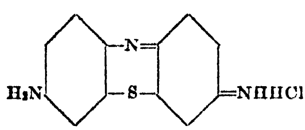
Group	Symbol of constant	Lauth's violet		Methylene blue	
		Value of constant	Inflection at pH	Value of constant	Inflection at pH
Oxidant's polar	K_{ob}	1.88×10^{-3}	11.0	Too high to measure	None.
Oxidant's amino	K_{ob2}	Negligibly small	None.	Negligibly small	None.
Reductant's bridging N	(K_{r1})	Fixes H^+	None	Fixes H^+	None.
Reductant's 1st amino	$(K_{r2}) K_{rb1}$	3.8×10^{-9}	5.30	1.35×10^{-8}	5.85
Reductant's 2d amino	$(K_{r3}) K_{rb2}$	4.5×10^{-10}	4.38	6.3×10^{-10}	4.52
	$E'_{pH\,0}$	0.563		0.532	

Incidentally, the structures accorded the thiazines indicate that the salt of methylene blue base with hydrochloric acid should be termed a chloride and not a hydrochloride as has frequently been done. The curious fact that silver nitrate does not readily precipitate silver chloride from acid solutions of methylene blue chloride is not proof that the chlorine is intimately incorporated in the organic molecule, for other reagents act as if an ionic metathesis does take place (Atack, 1915). Lenz (1895) suggested a soluble silver chloride double salt as the explanation of the peculiarity noted above. Whatever the explanation, the peculiarity is not unique.

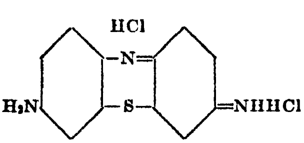
The second potentially basic group in the oxidant appears to be so weak that it forms no salt in the regions of pH we have studied. Kehrmann, Havas, and Grandmougin (1914), on the basis of spectroscopic data, believed that three salts are possible. These three salts they formulate for Lauth's violet in the following scheme:



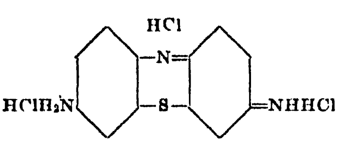
[Orange]



[Violet]



[Greenish blue]



[Yellowish green]

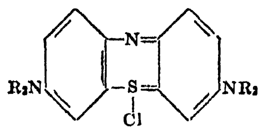
Our data show that, if more than one salt is formed, intense acidities are necessary. In conformity with this is the fact that Kehrmann, Havas, and Grandmougin required 35 per cent and 50 per cent oleum to obtain the alleged evidence of the second and third salts.

On reduction, the polar valence of the oxidant is destroyed. In the symmetrical reductant the two terminal nitrogen groups become

structurally identical, and our interpretation of the data before us is that they have distinguishable dissociation constants of the same order of magnitude, comparable in value with those of most substituted aromatic amines. This was confirmed for Lauth's violet by alkali titrations comparable with those made with oxidized and reduced indigo tetrasulfonate and described in the fourth paper of this series.

The over-all slope $\left(\frac{-dE}{dpH}\right)$ never tending to a zero value indicates that another group, presumably the bridging nitrogen, *fixes* a non-dissociating hydrogen or its equivalent; but there appears to be no evidence that there can be formed at this point a sodium salt of ordinary type as Landauer and Weil (1910) believed.

The interpretation we have given to the experimental data has allowed no place for the orthoquinoid formula, III, advanced by Kehrmann and Schaposchnikoff (1897) and Kehrmann (1902),



III

While we again emphasize the fact that the methods now under consideration can give no definite assurance to the allocation of dissociable groups, and while we might cite certain analogies as justification of Kehrmann's first formula, we consider it less probable than the Bernthsen formula, when written with the guidance of accepted principles of configuration. Although Formula III is still widely accepted and is still copied in many texts, Kehrmann himself abandoned it in 1914 as the result of investigations made with Havas and Grandmougin.

IX. General Discussion

(A) MECHANISM IN BIOLOGICAL OXIDATION-REDUCTION

Data in this and preceding papers of this series have a bearing upon certain current views of mechanism in biological oxidation-reduction.

It is of course obvious that the various schemes used to describe oxidation-reduction processes are formally interchangeable and each is legitimate for mental orientation of certain relative relations. However, there have been postulated from time to time various specific mechanisms for the operation of which one or another component of a reaction is required. In dealing with such *mechanisms* not all formal schemes of description are interchangeable. It is conceivable, for instance, that the living cell has evolved a type of catalyst

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dealing with the transport of hydrogen. Unless we are prepared to reinterpret this conception in more universal terms, we must formulate oxidation-reduction processes in terms of actual hydrogen transport wherever the formulation is to conform with the postulated catalysis. It then becomes important to distinguish carefully between formalism with its legitimate uses and such quantitative data as bear upon actuality. Wieland (1922) has made an attractive case for the assumption that many important biological oxidation-reductions are essentially cases of hydrogen transport. To illustrate this thesis, Wieland cites certain reactions which have fallen within the scope of our own studies, and it is with these alone that we shall now deal.

Among Wieland's illustrations are the quinone-quinol, the indigo-indigo white, and the methylene blue-methylene white transformations. In each case two hydrogens are concerned when the *isolated* compounds are considered. In each case our own treatment has not only included the participation of these hydrogens, but has made use of electronic structures which suggest that very widely among organic systems in aqueous solutions the rule of electrical neutrality can be satisfied by the participation of the ever-present hydrions. Thus Wieland's orientation from the point of view of hydrogenation and dehydrogenation receives support from our treatment to a certain limited extent, but the nature of the limitation it is important to perceive. It becomes plain when we consider the significance of the ionizations of the compounds now under consideration.

Wieland makes the difference between quinone and hydroquinone a difference of two hydrogens, as may reasonably be done in neutral and acid solutions. The same is assumed for indigo, although we have shown (*cf.* 4th paper of this series) that in solutions of mild alkalinity only one hydrogen remains fixed in the reductant. The other hydrogen (which, in an artificial systematization on the basis of hydrogenation, can be *assumed* as one of the two *equivalents* required for reduction) can, in a generalized theory, be considered as belonging to the indigo no more than to *other constituents of the solution.* Indeed there is no experimental proof that hydrogen *per se* is essential.

The case of the methylene blue system is complicated by the variety of ways in which its reversible oxidation-reduction can be written rationally; but it is reasonable to assume that although two equivalents are required for the reduction of the discrete, free, methylene blue cation only one hydrogen, *as hydrogen,* becomes fixed and that on the bridging nitrogen. The nonpolar group created from the polar group can acquire basic properties, either by direct addition of hydrion or by addition of water and subsequent ionization

of hydroxyl, but *does not do so appreciably in neutral solution.* The balancing of the equation either as

$$MCl + H_2 = MH + HCl$$

or

$$MCl + H_2 = MHHCl$$

concerns the *solution as a whole* and may be of *entirely secondary significance for mechanisms* concerned in the conduct of an *active species* of the methylene blue molecule.

Incidentally it may be said that no one who appreciates the evolutionary nature of scientific thought would be hypercritical of the implication in Thunberg's (1922) simultaneous use of the terms "hydrogen potential" and "active hydrogen" in his adaptation of Wieland's theory to his valuable experimental work with methylene blue. At the same time it must be pointed out that if the basis of calculation previously described (Paper II, this series) be accepted, the data now available show that a half-reduced solution of methylene blue at pH 7 is *in equilibrium* with a hypothetical hydrogen pressure of only about 10^{-15} atmosphere. Likewise a half-reduced solution of 2,6-dibromo phenol indophenol at pH 7.0 in the presence of washed tissue should have a hypothetical hydrogen pressure of only 10^{-21} atmosphere. If *equilibrium conditions* have any significance, and it remains to be shown that they do, then any postulated molecular layer of hydrogen on the surface of a catalyst must have its covering ability in harmony with these calculated partial pressures.

Further discussion will be found in the fifth paper of this series.

Of course, it is perfectly easy to accommodate some of the implied demands if the *schematic* aspect of the affair is the sole consideration. If this alone is the object of Wieland's theory, then our suggestion is trivial. But it seems that Wieland has attempted to trace a mechanism, and in our conception of this problem it is of considerable importance to know whether or not hydrogen regarded as an *actual* and not as a *schematic* representative of an electrochemical equivalent is required for the transformation of any given species.

The considerations we have urged are not to be regarded as definite refutations of Wieland's theory. They are of the nature of intuitive deductions rather than of compelling necessities. However, they are of the type which, had they been appreciated earlier, might have directed speculation into a channel other than that followed by the current of the present period.

Another aspect of the Wieland theory we shall discuss in a later paper.

(B) METHYLENE BLUE IN CYTOLOGY

We come now to an aspect of methylene blue or of the thiazines which may appear at first to lie entirely outside the province of this paper. We refer to the use of thiazines as cytological staining reagents. There are two points of contact. In the first place, the conduct of thiazine as a staining reagent may be complicated by its reduction. In the second place the thiazines have been classed as basic stains without that more detailed knowledge of their "strength" as bases which we now possess.

In the voluminous literature, which may be traced through v. Möllendorff's (1920) monograph, Lee's (1921) "The Microtomist's Vade-Mecum," and Michaelis' (1902) review, there will be found frequent references to the reduction of the staining reagent as an experimental fact which sometimes complicates the interpretation of staining reactions. Furthermore, there has run through the literature from the time of Ehrlich's (1886) suggestion, a stream of speculation regarding some vaguely defined relation between the staining properties of certain tissues and their oxidation-reduction metabolism. Unna (1913) has made much of one aspect of this; and Child (1919, 1920) (*cf.* McArthur 1921) has suggested a correlation between "staining gradient" and his so-called "metabolic gradient." In all such speculations there has been a noteworthy absence of quantitative data of the type we now have to contribute as a minor but essential part of the subject.

If the interpretation long accepted and confirmed by the present studies be correct, the dissociation of methylene blue chloride itself is such that no ordinary changes in pH can affect its degree. Consequently, if we exclude from consideration phenomena which were formerly called "salt effects," changes brought about in a solution with the object of altering the "reaction" (acidity) of the cell's environment can not affect the methylene blue and any observed change in staining quality must be explained otherwise. Incidentally this conclusion has a bearing upon the attempt by Fleischer and Amster (1923) to determine whether the toxicity of methylene blue to bacteria may be modified by changes of pH in accordance with the principle of Michaelis and Dernby (1922).

But to return to the subject of vital staining, let us recall that methylene blue under certain circumstances is readily reduced by many living cells. If now a tissue maintains at its periphery a sufficient reduction intensity, its interior will have to deal with—*not* methylene blue itself but a compound of very *different type,* namely—methylene white. While this compound may still be classed as a base, its basicity is very low and, relative to the reaction of the cell as a whole and perhaps to many of its constituent chemical groups, it is a neutral substance.

The practical significance and possible application of these relations we must leave to the judgment of those who are familiar with the problems of staining. They will recognize that our remarks apply to methylene blue and not to those constituents of commercial samples which are not methylene blue but which nevertheless are the most valuable in certain staining reactions. Compare Scott and French (1924).

We had hoped that a definite potentiometric characterization of each thiazine and of related compounds would aid in the assay of different samples of these important staining reagents, but having been unable to obtain from others or by our own efforts any thiazine sufficiently free from the last traces of active impurity to establish fundamental data of requisite refinement, we have had to leave this problem unsolved.

(C) METHYLENE BLUE AS A CHEMICAL REAGENT

As a chemical reagent, methylene blue has several interesting uses. It has been employed as an end-point indicator in oxidation-reduction titrations of quinone (Knecht and Hibbert, 1910), iron (Knecht and Hibbert, 1910, Jellinek and Winogradoff, 1923), tin (Atack, 1913), molybdenum (Knecht and Atack, 1911), sugar (Lane and Eynon, 1923) and selenious acid (Moser and Prinz, 1918). Details of some of these cases are described in Knecht and Hibbert's (1918) monograph, "New Reduction Methods in Volumetric Analysis" and in Atack's (1915) review of the analytical uses of methylene blue. Methylene white in solution has also been employed as the reducing agent in volumetric analysis, as, for example, by Hibbert (1909), Atack (1913), Thornton and Elderdice (1923). See also Atack (1915) and Kikuchi (1922). The methylene white-methylene blue system has recently been employed by Spoehr (1924) as an oxygen carrier in the oxidation of carbohydrates by air.

The systematic, as contrasted with the empirical, use of such a reagent requires the quantitative data on equilibrium potentials which we have furnished. Since such data are the beginning of systematic indicator theory in the oxidation-reduction realm, it may be illuminating to chart the methylene blue system in such a way as to show its relation to a few other systems.

In Figure 3 are drawn the E'_0 : pH curves of methylene blue and Lauth's violet, 2, 6-dibromo phenol indophenol, ferricyanide, and ferric iron. The indophenol curve is drawn from data given in the sixth paper of this series; that of iron is drawn on the assumption that in the zone of pH covered the potential of an equimolecular mixture of ferrous and ferric iron does not vary from 0.73 (Abegg, Auerbach, and Luther, 1915). For the ferricyanide system Kolthoff (1920) reviewed the earlier work upon the relation of acidity to potential, and

by use of his data for acid solutions he arrived at the approximate estimate of 5×10^{-4} for the fourth dissociation constant of H_4FeCy_6. The complete E'_0 : pH curve of this system remains to be determined. Several years ago, one of us (W. M. C.) made a series of crude measurements by introducing an equimolecular mixture of potassium ferrocyanide and potassium ferricyanide into buffers of the Clark and Lubs series and measuring the differences of potential between a saturated KCl-calomel half-cell and platinum electrodes immersed in these solutions. The results are shown in Figure 3. There it will be noted that in the less acid solutions step-wise deviations appear. These are due to the well-known effect of varying cation concentration (Schoch and Felsing, 1916) upon the ferricyanide potentials. These concentrations vary in the Clark and Lubs buffer solutions in a step-wise fashion through the phthalate, phosphate, and borate systems, indicated respectively by large dots, small dots, and crosses in Figure 3. As higher acidities are approached, we should expect to encounter the region where the dissociation of the fourth hydrogen of H_4FeCy_6 is suppressed and where there is consequently an inflection of the curve. Assuming this constant to be 1×10^{-3} we should have the curve as drawn. Considering that no allowance is made for varying cation concentration, the agreement of the observed values with the calculated is fair until the higher acidities are reached. In the more acid solutions experimental errors of diffusion potentials and uncertainty regarding possible effects of the group created by reduction upon ionizations common to oxidant and reductant combine with the "salt effect" and especially with the rapid decompositions to make impossible even an approximate comparison between these crude experimental data and the elementary theory. However, the striking effects of variation in pH are clear.

With these systems charted, it now becomes clear that if the older assumption regarding the invariance of potential with change of acidity were true, an excess of ferrocyanide should reduce methylene blue at high acidities. As a matter of fact, it does not, as is clearly revealed by the chart. On the other hand, an excess of ferrocyanide can reduce the indophenol at a properly adjusted value of pH. Now, it has been stated that ferrous salts will not reduce methylene blue. We can not, of course, project our curves into the pH region of extreme acidity without encountering complications, but we may foresee the *possibility* that at very high acidities a *large excess* of ferrous iron *might* reduce methylene blue. It does.

The ferrous-ferric system at higher pH should slope toward more negative potentials in accord with the principle outlined in the second paper of this series; but in addition to the more simple effect of change in pH, there is the effect of differential solubilities of the ferrous and ferric hydroxides to be taken into consideration. In the presence of

hydroxy acids, such as citric, another complication arises—the formation of iron complexes. While definite data on these effects are lacking, the general trends are known. Since, then, the position of the methylene blue system is well established, the outline of the interaction of methylene blue and iron compounds is clearer than at the time Morgan and Quastel (1923) discussed it in its relation to biological oxidation-reduction.

In view of the well-known general characteristics of the titanous-titanic system, it is, of course, evident that it will reduce methylene blue. Knecht (1907) found that very small concentrations of titanium can be detected by the reduction of the highly colored methylene blue solution provided no other reducing agent is present.

Less amenable to systematic treatment at the present time is the use of methylene blue in testing the reducing properties of solutions such as those of the sugars and other materials (*cf.* Hasse, 1919). Ihl (1888) applied methylene blue to the detection of impurities such as invert sugar in sucrose, and several investigators (e. g., Muster and Woker, 1913, Kashahara and Hattori, 1921) have applied it to the estimation of reducing sugars in biological fluids.

Methylene blue as a cation (see p. 1161) forms several interesting salts (*cf.* Atack, 1915, Monnier, 1916, Sinnatt, 1910–1912, Rozier, 1917), some of which are of value in analytical procedures. A salt of special interest to the cytologist is the insoluble neucleinate (Feulgen, 1913). But undoubtedly the insolubility of methylene blue silicate is of most general interest, since it can be correlated with the remarkable persistence with which methylene blue solutions stain glassware.

We fail to find any *common* principle underlying the manifold uses of methylene blue as a therapeutic agent, and the nature of some of these uses leads us to wonder whether *any* principle was considered. However, the definite data on some few properties of methylene blue which we have described should be useful to the pharmacologist who will not fail to note the radical changes induced by reduction at a potential readily acquired by cells.

Among the miscellaneous applications of this remarkable and ubiquitous dye is the employment of acetone-methylene blue mixtures for measuring the intensities of ultraviolet light for physiological purposes (Webster, Hill, and Eidinow, 1924). The reaction involved is said to be the decomposition of acetone to form reducing substances which decolorize methylene blue. If so, this process must be complicated by the more direct action of light upon methylene white, which we have already discussed. At any rate the employment of electrometric methods of measuring methylene blue-methylene white ratios might be applied to a more detailed study of Webster, Hill, and Eidinow's system.

(D) ENERGY CHANGES

It is well known that from electromotive force measurements such as those here described, certain thermal data can be calculated with far greater accuracy than can be found by the calorimetric method. So far as we know, Meyerhof (1912) is the only investigator who has given any calorimetric data on methylene blue. Unfortunately, Meyerhof, in reducing his methylene blue in alkaline solution, employed a concentration which undoubtedly resulted in a partial separation of methylene white. Furthermore, he does not record the pH of the measurement. Therefore, since heats of solution and of ionization are also neglected, Meyerhof's data are inadequate to support the value for the heat of reduction at 26.5° C., which he places at 25.7 kg. calories.

To obtain the order of magnitude of the change in heat content on reduction, we made one preliminary set of measurements as follows: A fixed mixture of methylene blue and methylene white of total concentration 0.0001 molar was found to give an E_h value of -0.0231 at 30° and of -0.0113 at 20°. At 30° the pH value was 8.62. Assuming that this borate buffer (No. 22) suffers a pH- change with change of temperature equal to that of the Sørensen buffer as given by Walbum (1920), the pH at 20° should be 8.68. Undoubtedly the slope of the E'_0:pH curve at 20° is comparable to that at 30°. Hence we can correct the E_h values at 30° and at 20° to what they would be at pH 8.62, and we then find that E_h at 20° and pH 8.62 is -0.0096. Consequently $\frac{dE_h}{dT} = -0.00135$.

From previous measurements at 30° and pH 8.62, $E'_0 = -0.039$. Assuming the above temperature coefficient to be linear, E'_0 at 26.5° C. (the temperature of Meyerhof's experiment) is -0.034.

From the Gibbs-Helmholtz equation

$$\Delta H = nFT \cdot \frac{dE'_0}{dT} - nFE'_0$$

$$\Delta H \doteq -17.1 \text{ kg. calories at pH } 8.62.$$

In a similar manner at pH 10.62, we find $\Delta H = -14.4$ kg. calories. These values include the heats of reduction and of ionization at given dilutions of H^+. Somewhat different values would be obtained if the comparative data were reduced to a common dilution of OH^-.

For comparison with data on other compounds, we might add that the free energy of reduction by one atmosphere hydrogen at pH 0 and 30° C., is 25.97 kg. cal. for Lauth's violet and 24.53 kg. cal. for methylene blue. We have not determined the effect of temperature on the dissociation constants and therefore can not give several other interesting relations which it is possible to determine with

potentiometric data. We believe the quality of the materials which are available does not justify the extension of these studies at the present time.

(E) MISCELLANEOUS APPLICATIONS

It is fairly obvious that data of the type we are reporting can be of use in the investigation of a variety of problems. The following experiments are in themselves of value merely as illustrations.

In subsequent papers we hope to extend this illustrative material and furnish more definite contributions to the several problems we now only touch upon.

(1) MILK TESTS WITH METHYLENE BLUE

In the Schardinger (1902) reaction a mixture of methylene blue and formaldehyde is incubated with milk; and in milk that has not been heated, the methylene blue is soon reduced. This reduction is supposed to indicate the activity of an enzyme native to fresh milk. Bredig and Sommer (1910) simulated the Schardinger reaction with platinum as catalyst.

Since methylene blue indicates but a comparatively narrow zone of reduction intensity, we suspected that the course of the activation of formaldehyde by milk might be followed in more detail by electrode measurements. A sample of fresh whole milk was divided into four portions. One was heated in an autoclave at 15 pounds pressure for 15 minutes and then cooled. A second portion was acidified with HCl to pH 5.9. A third was alkalinized with NaOH to pH 7. The fourth portion was left at its original reaction of pH 6.5. The several portions were then warmed to 37° C., and to 100 c. c. of each there was added 5 c. c. of 1 per cent formaldehyde solution. They were placed in vessels such as *A* of Figure 5 and liquid contact with a saturated KCl calomel half-cell was made through *B*. The results of measurements are shown in Figure 6, where electrode potential reduced to the customary hydrogen scale is plotted as ordinate (E_h) and time (in minutes) of incubation at 37° is plotted as abscissa. The zones of potential within which methylene blue passes from 4 per cent to 96 per cent reduction at each pH are indicated by triangles. It is evident that this indicator reveals but a limited part of the course of reduction, that a reaction proceeds in the absence of methylene blue, and that there is a distinct pH effect both upon the rate of action (*cf.* Allemann, 1918, Virtanen, 1922) and the level of potential at which methylene blue is reduced.

This method of following the Schardinger reaction is comparable to a certain extent with Reed's (1916) method of following oxidase activity, but with the important difference that some of Reed's experiments were on depolarization phenomena and others on the "oxygen electrode," both very difficult to interpret.

Milk, when subjected to bacterial action, becomes reducing (*cf.* Duclaux, 1894). This fact has been elaborated upon in the design of the so-called methylene blue test of milk. (See references.) Owing to its practicability in factory, home, or rural district unequipped for more elaborate milk control, this simple test has been studied extensively. The opinion seems to prevail that if artificial interpretations are not stressed, the test can be of considerable public-health value. It is therefore important to establish the primary interpretation to be given to the observed fact of methylene blue reduction. Secondary correlations can then be made clearer.

In Figure 7 are shown electrode measurements made with milk subjected to the following manipulations: The sample designated "direct from cow" was delivered from the udder to a sterile tube. The sample designated "bottled" was herd milk, passed through the ordinary processes for bottling raw milk. Some of this same milk was heavily inoculated with a culture of *Bact. coli.* Each sample was placed in a bottle as shown in Figure 5, incubated at 30° C. and its electrode potential against a calomel cell measured from time to time. The potentials reduced to a hydrogen standard are plotted in Figure 7 against time in hours as abscissa.

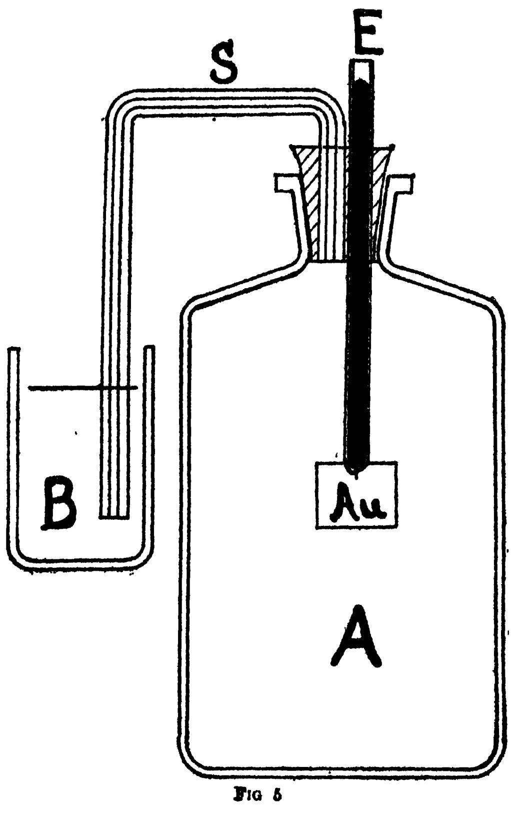

Fig 5

We have repeatedly observed differences in the potential: time curves such as are shown in Figure 7. The differences in time required for methylene blue reduction have been repeatedly correlated by others with conditions such as were imposed in this experiment, and consequently there is nothing new in this aspect of the subject. However, we emphasize the possible advantages of obtaining for the reduction: time relations more complete histories than are

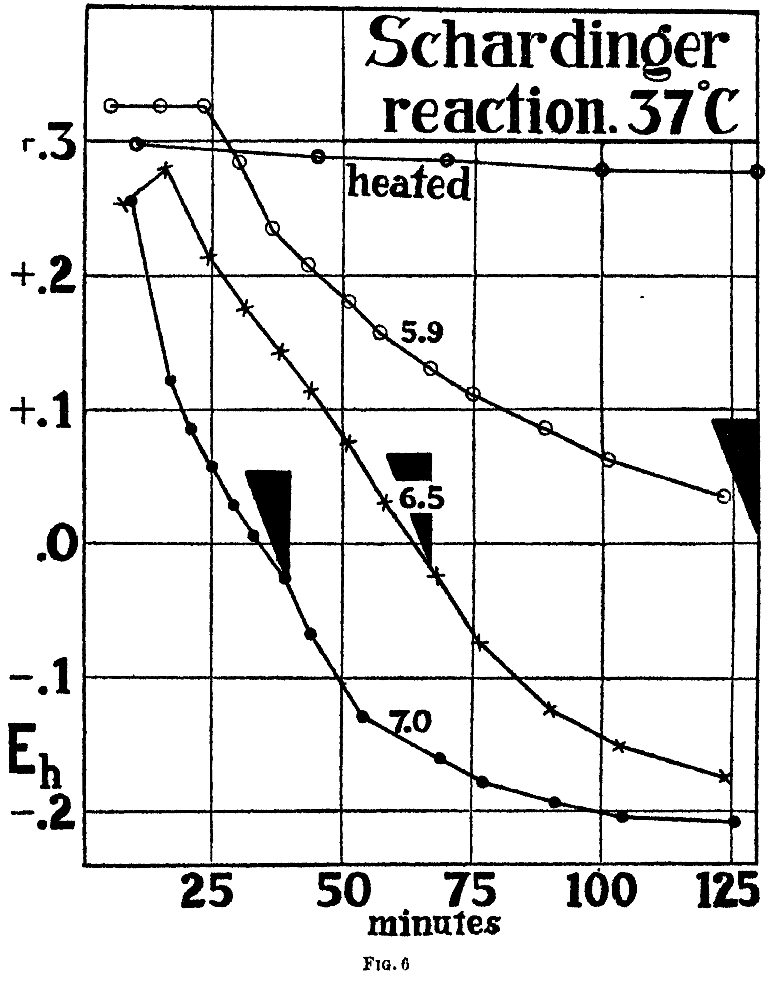

FIG. 6

revealed by methylene blue alone. It is entirely possible that an electrode study of more varieties of market milks than those available to us will show the advantage of using a more electro-positive indicator, and that this, together with simple devices, will very materially reduce the time required for the test. If given the more extensive scientific investigations it deserves, the test may well be improved.

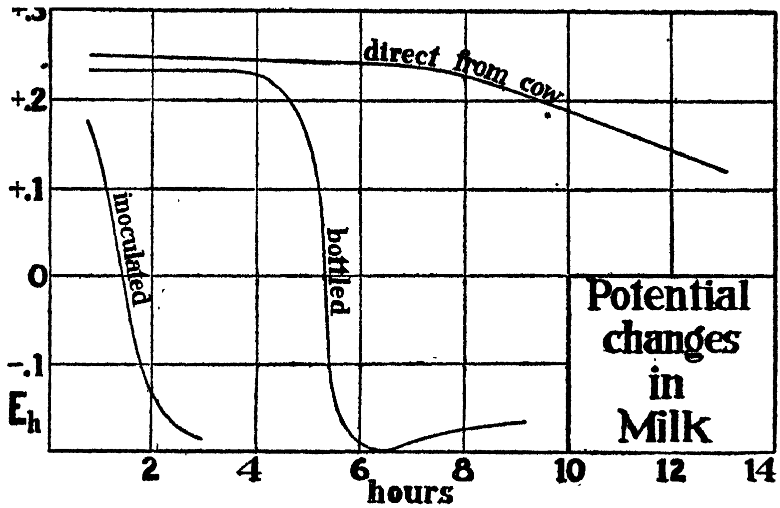

FIG. 7

(2) BACTERIAL REDUCTION

The reducing power of bacterial cultures as displayed in this test of milk is rather general and has been frequently investigated. In almost every one of these investigations methylene blue has been mentioned or has been made the specific tool. (See references under General Bacteriology.) We shall postpone an account of our general studies on bacterial reduction and recall to the reader Gillespie's (1920) demonstration that reduction by bacterial cultures is measurable by potentiometric methods. The data we report define the intensity factors controlling the reduction of methylene blue, and it is important to distinguish these from the capacity factor. Wichern (1908) was the first, we believe, who made any quantitative measurements of methylene blue reduction. He, and later Fred (1912) with bacteria and Strassner (1910) with tissues, allowed cells to act upon known quantities of the dye and then estimated the residual unreduced methylene blue by the titanium method of Knecht and Hibbert. They thus determined the mol fractions of dye reduced. This shows the reducing capacity which, when converted to electrochemical equivalents and multiplied by the intensity factor in volts, gives the free energy involved. The capacity factor and the intensity factor each has its unique significance. Both are of coordinate importance.

Just as different organisms are equipped to attain different levels of acid intensity (pH) under a given set of conditions, so our preliminary work has shown that different bacteria are equipped to attain different levels of electrode potential under a given set of conditions. They may now be correlated with the reducing action on dyes. One

instance is found in the observation by Sherman and Albus (1918) of the reductive abilities of milk streptococci. Having made a grouping of certain cultures on the basis of origin, morphology, and a statistical analysis of other characters, Sherman and Albus found that their *Strep. lacticus* type reduced methylene blue in milk, whereas all cultures of their *Strep. pyogenes* type failed to reduce. (Compare Avery, 1922, and Brown, 1920.) Such differences may now be expressed in numerical values for reduction intensity.

Other similar limitations in the reduction intensities attained by pure cultures might be cited.

If, however, organic material is subjected to *general* infection, there develop bacteria which are almost sure to carry the reduction potential well beyond the zone of methylene blue if the reduction be not opposed by air or other oxidations. Indeed, it is a principle emphasized by Pasteur, and now capable of reinterpretation, that with the ever-present reducing tendency of cellular life there will occur, in a general infection, a tendency for types to succeed one another in the order of their ability to endure a more and more intensely reducing environment.

(3) "RELATIVE STABILITY" OF SEWAGE

It follows, then, that a sewage, while fresh, will tend to reduce methylene blue. Recognizing this fact, Spitta and Weldert (1906) proposed the reduction of methylene blue as a test of the state of a sewage effluent.

In modern treatment of sewage it is not always practicable to effect a complete purification of the refuse-bearing water. The effluent from a sewage-treatment plant carries a residue of organic matter which is considered satisfactory if its organic content can be "burned" by the oxygen-bearing waters into which it is dumped. Therefore, following the development of the Spitta and Weldert test by Phelps and Winslow (1907), Phelps (1909) emphasized the advantages of so interpreting the test that it can indicate the condition of the effluent in relation to the degree of oxidation still required, that is, its "relative stability." Since Phelps's treatment involves some questions of general importance, we shall subject it to a brief critical examination.

There are involved the following postulates:

1. It is assumed that the bacterial activity of an effluent has already settled down to a steady state, and that lag or acceleration of growth and significant changes of flora will not occur to invalidate the following argument.

2. It is then assumed that under condition (1) the rate of disappearance of dissolved oxygen or equivalent oxidizing material will be proportional to the concentration of the oxygen or its equivalent.

In other words, the oxygen consumption while undoubtedly *not a monomolecular reaction* is postulated to have the *rate* of a monomolecular reaction. There can then be applied the familiar equation which Phelps has recast to form (A).

$$\frac{y}{a} = 1 - k^t \tag{A}$$

Here a is the total amount of oxygen required to oxidize the material to a stable condition, k is a constant, and t is the time required to exhaust the available oxygen, y.

3. It is assumed that of the family of curves corresponding to equation (A) there is one having a definite value of k defining the rate for sewage.

4. It is assumed that this k can be determined by a statistical treatment of Phelps's data on the time required for reduction of methylene blue by a large number of tests, and finally,

5. It is assumed that the disappearance of available oxygen, y, at time, t, is determined by the decoloration of methylene blue.

The ratio $\frac{y}{a}$, being $\frac{\text{available oxygen}}{\text{total oxygen demand}}$, is multiplied by 100 and then called the relative stability, S.

$$S = 100(1 - k^t) \tag{B}$$

The time, t, in days, required for methylene blue reduction is the only experimental datum required to determine S if k be fixed.

The following critique is an effort to revert attention to the basic phenomena which deserve investigation unembarrassed by concepts formed to meet pressing demands of a practical problem.

Starting with postulate 5, we find that the conduct of methylene blue as an oxygen-end-point indicator is of basic importance. Phelps has considered this with caution. He recalls, in the first place, the claim of H. W. Clark and Adams (1908) that indigo carmine is reduced before methylene blue. So far as interpretation of intensity is concerned, these authors must have been misled either by an inhibitory action of their sample of methylene blue, by a quantity factor, by their statistics, or by some unknown factor, because a comparison of the data in this paper and the data in the fourth paper of this series shows that indigo carmine requires a more intense reduction tendency than does methylene blue. However, the fact of a *difference* exists and was recognized by Phelps, who states that "it is possible that the end-point of methylene blue is a little too far along."

It would take us far afield if we entered into a discussion of what constitutes a theoretically good oxygen-end-point indicator. The fact of the matter is that under the conditions of the putrescibility

test there is a gradual change of potential with time, that frequently no characteristic of the time : potential curve reveals the moment of oxygen exhaustion, and that methylene blue conducts itself in the course of the potential change as an indicator of a definite level of reduction potential. For instance, consider the following experiment:

A raw Washington sewage taken from the main during a storm and therefore highly diluted, was added in 50 c. c. portions to a solution made by diluting 30 c. c. M/20 buffer to 250 c. c. with water. Both buffer solutions and distilled water had been aerated by standing a week or so at room temperature. (The oxygen contents were not determined.) The mixture was carefully siphoned into vessels of the form shown in Figure 5. The changes of potential and the pH values of the different mixtures are shown in Figure 8. Again, there are shown by means of triangles the zones of potential within which methylene blue is reduced at the different values of pH. It is obvious that the same quantities of the same sewage, diluted with equal quantities of buffers, *presumably* containing the same amounts of oxygen, require different periods of time to reduce methylene blue. Evidently, the variation in pH is *one* of the factors to be considered.

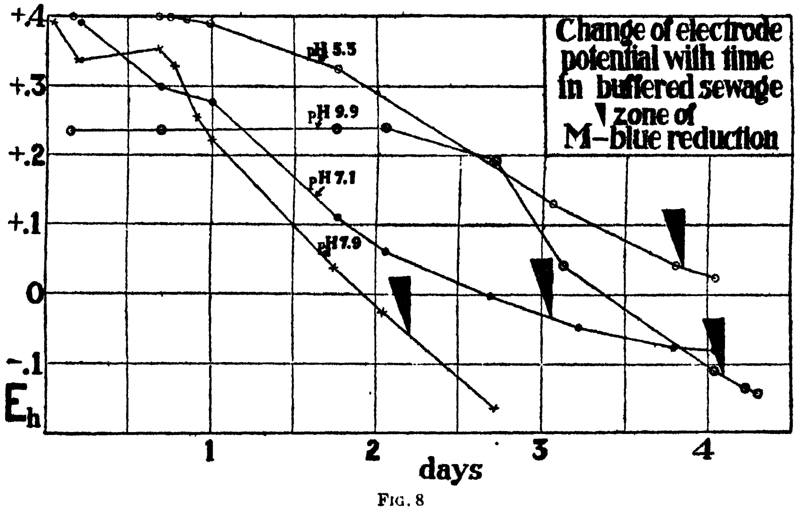

FIG. 8

Parallel experiments show that indophenols, methylene blue, and indigo carmine, with qualifications which will be discussed in a later paper, are reduced in the order named and at times predicted from the order of their reduction characteristics and from the course of potential change in the absence of the indicators. It should be noted, however, that too much indicator can produce, in addition to a poisoning action on the bacteria, a poising (see Paper I) effect with consequent delay. Compare Lederer (1914).

Other tests on sterile organic media inoculated with various bacteria show the course of the potential change to be dependent on the nature of the flora.

Of particular interest at the moment is the fact that the curves of Figure 8 give no indication of the time of oxygen exhaustion. Undoubtedly this means that the trend toward reducing potentials is not rigidly held in check by oxygen, but is delayed. Under anaerobic conditions the restraint is removed and still it is found that an appreciable time is required for the reduction of methylene blue. This has not been taken into consideration in the formal derivation of the relative stability equation. It should vary with substrate, flora, physical conditions, and amount and kind of indicator. (*cf.* Clark and Cohen, 1922.)

Let us next consider postulate 4.

For the determination of k, Phelps employed a large number of data on times required for methylene blue decoloration, but he does not describe the logic of this application. We find that without any reference whatever to mechanisms, Phelps's data can be formulated by a certain type of probability equation which finally assumes the form of the relative stability equation. This is not strange, since the law for the rate of monomolecular reaction can itself be derived from equations of probability. The important aspect is that Phelps's equation can be considered as purely descriptive of a set of data on reduction times. His extension of the equation to postulate 2 appears then to have been *intuitive*.

That the intuition was very good is suggested by Theriault's (1920) investigation of actual oxygen disappearance. Unfortunately the data reported by Theriault in this paper were incomplete; but he informs us in a private communication that recent data show not only that the rate of oxygen disappearance is that of a monomolecular reaction, but is characterized by a constant numerically very close to that deduced by Phelps for the relative stability equation.

This is so remarkable that it deserves close study. It would have seemed improbable that such variable material could be characterized by a constant in any way other than statistical. If it be true, then the relative stability equation with its statistical constant can apply only when the volume of oxygen (with its characteristic rate of exhaustion) is high with respect to the sewage demand. For we find that it certainly can not apply when the time of the anaerobic phase is large in relation to the time of the aerobic phase. Indeed this is implicit in Phelps's treatment by his rejection of all cases of low stability.

Without taking up in detail all the ramifications of this complicated problem, we believe that we have made it clear that the primary conditions revealed by the decoloration of methylene blue is of an

entirely different category from that which it was formerly possible to perceive, and that if other methods of evaluating sewages are to be correlated with the putrescibility test, the conditions under which the correlation is valid must be determined.

However, quite aside from the laborious task of establishing these conditions of correlation, there remains the inherent value of the primary fact revealed by methylene blue reduction. Coupled with extensive experience, such as Phelps and others have brought to bear, the simple test is of considerable value. However, by confining themselves to one indicator without even a quantitative evaluation of the characteristics of this one indicator, the students of the putrescibility test have been limited in their power to analyze their problem. There must have come within the view of the more experienced investigators, phenomena whose significance was obscured by the arbitrary emphasis upon the value of methylene blue. We therefore recommend that the subject be investigated with the aid of electrode measurements and without any attempt to prove or disprove preconceived ideas. Difficulties in the use of the electrode will be encountered; but we are confident that, in spite of all the difficulties, the electrode in cautious hands can contribute valuable information. We find it applicable in cases where suspended material precipitates methylene blue. It can be led to points inaccessible to ordinary methods of sampling. It can reveal a complete history of the time:reduction intensity curve. It can be used with apparatus which will furnish a *continuous* record of the reduction intensity wherever oxygen and other agents do not upset its conduct.

Thus there should be revealed characteristics of industrial wastes, the effects of materials poising the potential above and below the region of methylene blue, the oxygenation delay, the effects of prestabilized material, and, perhaps, correlations between state of reduction and flora.

Finally, we would emphasize two radically distinct aspects of the subject. In the first place, there remain to be investigated in detail those phenomena of sewage conduct which fall strictly within the category of changes in reduction intensity. Quite aside from these, but indirectly connected with them under certain circumstances, are the various problems which have entered into discussions of the putrescibility test. Therefore, in the second place, there remain to be determined the unique facts of the first category which can be correlated with those of the second.

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(4) THE RATE OF OXIDATION OF METHYLENE WHITE

Into various problems there enters the rate of methylene white oxidation by atmospheric oxygen. Atack (1915) states that leucomethylene blue may be very slow in becoming oxidized by atmospheric oxygen. The following crude experiment shows the influence of pH:

An aqueous solution of methylene blue was reduced with hydrogen and platinized asbestos. The resulting saturated solution of methylene white was filtered under nitrogen protection into a burette and aliquots of 5 c. c. were added to 50 c. c. portions of different, deaerated buffer solutions. With the same apparatus a fairly constant air stream was passed through each solution and titrations of regenerated methylene blue were made. In each case the initial concentration of methylene white in the buffer solutions was approximately 0.0001 *normal*. Instead of a special titanium solution adapted to the case at hand, a stock solution 0.018 N was used. A stop watch was used to time the aeration.

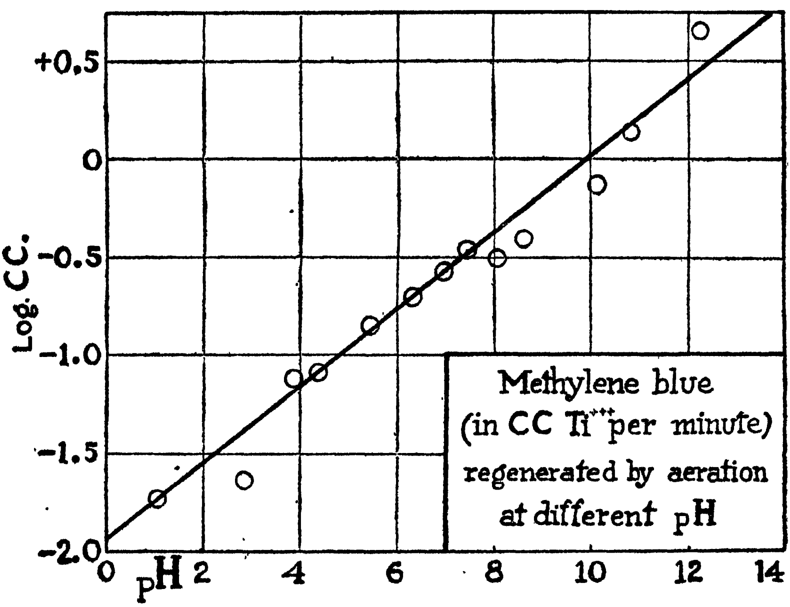

FIG. 9

The following results were obtained: In Figure 9 are plotted the pH values of the solutions and the logarithms of the rate of regeneration in terms of cubic centimeters of titanium trichloride per minute. Of course, in such an experiment, precise analysis of conditions is difficult, since even the rate of diffusion of oxygen from air bubble to methylene white is a complicated process. Nevertheless, the striking effect of pH is evident in Figure 9, and for the conditions obtaining, the rate of regeneration is roughly proportional to the fifth root of the hydroxyl ion concentration.

Since the basic dissociation constant of the oxidant is very much higher than that of the reductant and since increase of pH increases the rate of oxidation, an unbuffered solution of pure methylene white exposed to oxygen should exhibit autocatalysis.

(5) ANAEROBIOSIS

There was mentioned above the difficulty in placing end-point indicators for free oxygen upon a sound theoretical basis. The difficulty applies to the use of methylene blue as a criterion of anaerobiosis (*cf.* Hall, 1921). Here is a very real problem which, perhaps, will not be solved until the electrometric conduct of oxygen as displayed, on the one hand, in the oxygen electrode and, on the other hand, in the conduct of oxygen-combining compounds is satisfactorily described. But while this problem remains a very important one in itself, it has been suggested by Clark (1924) that the subject of anaerobiosis may be regarded from a fresh point of view which will, perhaps, leave the first problem in a position of minor significance to so-called anaerobiosis itself.

We may here again emphasize Clark's (*loc. cit.*) view that the isolation of anaerobic processes from the very confusing phenomena of aerobic life may simplify experimental attack and reveal in their elementary form phenomena which have been lost in confusion arising from the complexity of two opposing tendencies. At any rate the numerical data we furnish relieves the subject of certain speculative ideas which are rampant in the literature.

X. Conclusion

In listing the biological applications of methylene blue which can profitably be approached with a fresh and broader viewpoint, we are not overlooking a most serious difficulty which will be encountered at every turn. Briefly stated it is this: When the observational facts with their various practical uses are accumulated, what, after all, is the fundamental significance of the potentials biologically induced? The answer will be found very much more difficult than the answer to hydrogen electrode potentials. We shall discuss this more at length in a later paper. In the meantime it is pertinent to ask why it is that students of those biochemical reactions which are often called electromotively inactive or irreversible have insistently used the beautifully reversible and definitely electromotively active methylene blue system as a favorite reagent. Is it, as suggested in the introduction, merely the prestige of this ubiquitous dye or has there been an intuition of a fundamental significance? We shall not now attempt an answer, but we have furnished in this paper such answers as are implicit in the potential measurements of the methylene blue system.

Since methylene blue as an indicator of reduction has been used in a wide variety of studies which it is impracticable adequately to review, and since in many of these cases the comments we have made may be applicable, there is appended to the list of references cited in the text an incomplete bibliography which we hope will be useful.

Acknowledgments.—For chemical analyses reported in this paper we are indebted to Chemist E. Elvove and Assistant Chemist C. G. Remsburg. Mr. W. L. Hall assisted in some potentiometric measurements. We also wish to express our appreciation of the assistance rendered by Dr. J. A. Ambler and W. C. Holmes, of the Bureau of Chemistry, and by Doctor Scott and Mr. French, of Walter Reed Hospital, in spectrophotometric measurements.

XI. Summary

Methylene blue was found to be difficult to purify. Various samples carefully recrystallized contained excess chlorine and sulphur and gave evidences of small percentages of electromotively active impurities. Drying was found to destroy progressively the characteristic properties.

Methylene white solutions were found to be sensitive to light. Evidence 's given that the near ultraviolet is most effective. Methylene white is soluble only to the extent of about 0.0005 molar in acid solutions and about 0.00002 molar in alkaline solutions. The rate of oxidation of methylene white solutions by air varies as the fifth root of the hydroxyl ion concentration.

Mixtures of methylene blue and methylene white give electrode potentials which vary with total concentration. Different samples behave as if there were present small quantities of active impurity.

While the limitations implied by the above facts have made impracticable a high order of accuracy in the determination of constants of the oxidation reduction equilibria, these constants have been determined sufficiently well to characterize the main features of the methylene blue and of the Lauth's violet systems. The interpretation is that methylene blue base is an extremely strong base with dissociation constant too high for measurement by the methods employed. Lauth's violet has a basic dissociation constant of 1.9×10^{-3}. In each case the nonpolar amino group has a basic dissociation constant too low to measure by the method employed.

The reductant in each case fixes one hydrion and, in addition, the two amino groups have basic dissociation constants as follows:

	K_{rb1}	K_{rb2}
Methylene white	1.4×10^{-9}	6.3×10^{-10}
Leuco Lauth's violet	3.8×10^{-9}	4.5×10^{-10}

The characteristic potentials at pH 0 and 30° C. and the corresponding free energies of hydrogenation are:

Methylene blue system 0.532 v., $\Delta F = 24.53$ kg.-cal.

Lauth's violet system 0.563 v., $\Delta F = 25.97$ kg.-cal.

An equation is developed relating these constants in convenient form with pH and with electrode potential-difference, and values calculated thereby conform satisfactorily with experimental data.

The interpretation is in harmony with the constitutional formula proposed by Bernthsen.

The peculiarities of methylene blue are such that it will be found inconvenient as a practicable reduction indicator for precise measurements.

The bearing of the concepts and of the numerical data on Wieland's theory of hydrogen transport, upon concepts used in the theory of cell staining, upon the use of methylene blue in analysis and in a variety of tests is discussed.

Experiments are described as illustrative material for the reinterpretation of methylene blue reduction in the Schardinger reaction, in the methylene blue test of milk quality, in the putrescibility test of sewage, in the differentiation of bacterial species, in the test of anaerobiosis, and in a wide variety of other applications.

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WYOMING LAW PERTAINING TO PREVENTION OF GOITER

The following is a Wyoming law (ch. 123) approved February 25, 1925, giving the board of health of that State authority to adopt regulations looking to the prevention and control of goiter:

SECTION 1. The State Board of Health of the State of Wyoming shall have authority to pass such rules and regulations as shall be necessary to regulate the sale of domestic salt or prescribe such manner of treatment as has been found practical to prevent goiter from becoming more prevalent among the citizens of the State of Wyoming.

SEC. 2. This act shall take effect and be in force from and after its passage.

DIGEST OF CURRENT PUBLIC HEALTH COURT DECISIONS

Local sanitary code held nullity because board adopting same lacked legal existence (New Jersey Supreme Court).—In 1912 the town of Nutley changed its form of government to the commission form provided for by chapter 221, laws of 1911. At that time Nutley had a board of health as provided for by the board of health act of 1887. In 1913 a law supplementing the 1911 act was passed, such supplemental act being chapter 282 of the 1913 laws. This 1913 law provided that whenever the provisions of the 1911 act had been adopted by any municipality "all boards and bodies, whether State or local municipal agencies then existing in such municipality (except the board of education and the district court or courts), shall be ipso facto abolished." The board of health created under the 1887 act continued in office and continued to function, adopting in 1914 a sanitary code. In 1917 this board of health was abolished by the board of commissioners, who, in 1924, repealed the 1914 sanitary code and adopted a new one. In 1922 the plaintiff was convicted of three separate offenses under the 1914 sanitary code. The supreme court set aside all three convictions, holding that the 1914 sanitary code never had any legal existence as a piece of municipal legislation. The court held that the board attempting to adopt it had no legal existence because by the 1913 act their offices had been abolished and thereafter they were neither de jure nor de facto officers and their acts were nullities. (Corb *v.* Board of Health of Town of Nutley et al., 127 Atl. 812.)

Liability for injury caused by consumption of food containing mouse (Massachusetts Supreme Judicial Court).—The plaintiffs, husband and wife, boarded with a certain person, who, through her agent, purchased of the defendant a raisin pie. Portions of the pie were served to the plaintiffs who partook of the same, the husband finding the body of a mouse in his portion. Both plaintiffs were made ill, and each brought action for alleged negligence. The defendant company bought the filling for its pies but made the pie crusts and baked

the pies. The lower court directed the jury to return a verdict for the defendant. The supreme court held that, upon the evidence, the jury could have found for the plaintiffs and that the case should have been submitted to the jury. The court stated that the defendant, being a manufacturer of a part of the pie, was, for that reason, responsible for the finished product. (Sullivan *v.* Manhattan Market Co., 146 N. E. 673.)

Seller of unwholesome meat held liable (Ohio Supreme Court).—The plaintiff in the lower court was made ill by eating some veal purchased at retail from the defendant. The jury found that the veal was unwholesome when sold by the defendant, such a sale being in violation of a State law. The supreme court held that such unlawful sale was negligence per se and basis for recovery of damages, provided there was no contributory negligence on the plaintiff's part. It was further held that neither lack of intent on the seller's part to violate the law or the seller's ignorance of the unwholesome condition of the meat constituted a defense. (Portage Markets Co. *v.* George, 146 N. E. 283.)

Law prohibiting use of saccharin in soft drinks held valid (Ohio Supreme Court).—Section 1089-9, Ohio General Code, prohibiting the use of saccharin in soft drinks, was held constitutionally valid and within the inherent police powers of the State. Regarding the contention that the act was discriminatory because the prohibition was confined to soft drinks, the court stated that "The constitutional validity of the act can not be attacked because its scope was not extended to cover the entire field of possible abuses." (Longbrake *v.* State, 146 N. E. 417.)

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended May 30, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	1
Chicken pox	32
Diphtheria	6
Dysentery	88
Influenza	71
Malaria	63
Measles	10
Mumps	27
Pellagra	40
Pneumonia	51
Poliomyelitis	1
Scarlet fever	25
Smallpox	134
Tetanus	2
Tuberculosis	53
Typhoid fever	36
Whooping cough	35

ARIZONA

Cerebrospinal meningitis	1
Chicken pox	7
Diphtheria	1
Measles	35
Mumps	2
Pneumonia	1
Scarlet fever	5
Tuberculosis	9
Typhoid fever	3
Whooping cough	3

ARKANSAS

Chicken pox	17
Diphtheria	2
Hookworm disease	4
Influenza	37
Malaria	116
Measles	16
Mumps	28
Ophthalmia neonatorum	2
Pellagra	25
Scarlet fever	2
Smallpox	1
Trachoma	2
Tuberculosis	9
Typhoid fever	19
Whooping cough	48

CALIFORNIA

	Cases
Cerebrospinal meningitis	7
Diphtheria	89
Influenza	20
Leprosy	2
Lethargic encephalitis	1
Measles	62
Poliomyelitis:	
Fresno	1
Long Beach	1
Los Angeles	2
Los Angeles County	1
Orange County	1
San Francisco	1
Santa Ana	1
Williams	1
Scarlet fever	96
Smallpox:	
Los Angeles	40
Los Angeles County	10
Monterey Park	5
Oakland	17
Riverside County	6
Sacramento	5
Scattering	23
Typhoid fever	11

COLORADO

(Exclusive of Denver)

Chicken pox	2
Diphtheria	6
Measles	3
Mumps	17
Pneumonia	1
Rocky Mountain spotted fever	1
Scarlet fever	3
Tuberculosis	19
Typhoid fever	1
Whooping cough	2

CONNECTICUT

Cerebrospinal meningitis	1
Chicken pox	34
Diphtheria	17
German measles	86
Lethargic encephalitis	2
Influenza	2

CONNECTICUT—continued

	Cases
Measles	171
Mumps	13
Paratyphoid fever	2
Pneumonia:	
Broncho	15
Lobar	29
Scarlet fever	67
Tuberculosis (all forms)	28
Typhoid fever	7
Whooping cough	83

DELAWARE

Diphtheria	1
Scarlet fever	6
Tuberculosis	5
Whooping cough	2

FLORIDA

Cerebrospinal meningitis	1
Chicken pox	9
Diphtheria	9
Malaria	6
Measles	1
Mumps	25
Pneumonia	1
Smallpox	10
Tuberculosis	14
Typhoid fever	15
Whooping cough	3

GEORGIA

Anthrax	1
Cerebrospinal meningitis	2
Chicken pox	42
Diphtheria	3
Dysentery	92
German measles	1
Hookworm disease	7
Influenza	49
Malaria	87
Measles	28
Mumps	78
Pellagra	12
Pneumonia	29
Rabies	2
Scarlet fever	5
Septic sore throat	11
Smallpox	30
Tetanus	1
Tuberculosis	64
Typhoid fever	54
Whooping cough	31

ILLINOIS

Diphtheria:	
Cook County	49
Scattering	24
Influenza	50
Lethargic encephalitis—Cook County	1
Measles	1,210
Pneumonia	159
Poliomyelitis—Rock Island County	1
Scarlet fever:	
Cook County	204
Clinton County	10
Stephenson County	11
Scattering	85

ILLINOIS—continued

	Cases
Smallpox	35
Tuberculosis	230
Typhoid fever	20
Whooping cough	245

INDIANA

Chicken pox	64
Diphtheria	12
Influenza	19
Measles	124
Mumps	2
Pneumonia	11
Scarlet fever	104
Smallpox	102
Tuberculosis	90
Typhoid fever	4
Whooping cough	27

IOWA

Diphtheria	13
Scarlet fever	26
Smallpox	25

KANSAS

Chicken pox	71
Diphtheria	10
German measles	3
Influenza	5
Lethargic encephalitis	1
Measles	12
Mumps	115
Pneumonia	26
Scarlet fever	46
Smallpox	1
Tuberculosis	50
Typhoid fever	3
Whooping cough	51

LOUISIANA

Diphtheria	13
Dysentery	2
Influenza	40
Malaria	14
Pneumonia	44
Poliomyelitis	1
Scarlet fever	6
Smallpox	16
Tuberculosis	21
Typhoid fever	54
Whooping cough	18

MAINE

Cerebrospinal meningitis	1
Chicken pox	19
Diphtheria	3
Influenza	21
Mumps	34
Pneumonia	10
Scarlet fever	20
Tetanus	2
Tuberculosis	6
Typhoid fever	3
Vincent's angina	1
Whooping cough	2

MARYLAND[1]

	Cases
Cerebrospinal meningitis	1
Chicken pox	108
Diarrhea enteritis	1
Diphtheria	26
Dysentery	1
German measles	4
Influenza	15
Lethargic encephalitis	2
Malaria	1
Measles	33
Mumps	81
Pneumonia (broncho)	31
Pneumonia (lobar)	37
Scarlet fever	46
Tuberculosis	57
Typhoid fever	5
Whooping cough	116

MASSACHUSETTS

Cerebrospinal meningitis	3
Chicken pox	113
Conjunctivitis (suppurative)	33
Diphtheria	75
German measles	267
Hookworm disease	1
Influenza	10
Lethargic encephalitis	5
Measles	707
Mumps	44
Ophthalmia neonatorum	24
Pneumonia (lobar)	98
Scarlet fever	216
Trachoma	2
Tuberculosis (pulmonary)	166
Tuberculosis (other forms)	93
Typhoid fever	9
Whooping cough	118

MICHIGAN

Diphtheria	55
Measles	553
Pneumonia	98
Scarlet fever	291
Smallpox	15
Tuberculosis	303
Typhoid fever	8
Whooping cough	121

MINNESOTA

Cerebrospinal meningitis	1
Chicken pox	105
Diphtheria	41
Influenza	6
Measles	48
Pneumonia	3
Scarlet fever	239
Smallpox	21
Tuberculosis	113
Typhoid fever	8
Whooping cough	38

MISSISSIPPI

Diphtheria	6
Scarlet fever	1
Smallpox	17
Typhoid fever	21

[1] Week ended Friday.

MISSOURI

(Exclusive of Kansas City)

	Cases
Chicken pox	90
Diphtheria	59
Influenza	4
Malaria	7
Measles	22
Pneumonia	17
Scarlet fever	157
Smallpox	26
Trachoma	2
Tuberculosis	96
Typhoid fever	2
Whooping cough	45

MONTANA

Chicken pox	4
Diphtheria	1
German measles	2
Measles	7
Mumps	1
Rocky Mountain spotted fever—Forsyth R. D	2
Scarlet fever	10
Tuberculosis	2
Tularæmia—Hamilton	3

NEBRASKA

Chicken pox	20
Diphtheria	7
Measles	1
Mumps	31
Scarlet fever	10
Smallpox	20
Typhoid fever	2
Whooping cough	7

NEW JERSEY

Cerebrospinal meningitis	2
Chicken pox	138
Diphtheria	60
Influenza	3
Measles	415
Pneumonia	108
Scarlet fever	186
Smallpox	4
Typhoid fever	12
Whooping cough	165

NEW MEXICO

Chicken pox	4
Diphtheria	2
Dysentery	3
German measles	2
Measles	7
Mumps	8
Pneumonia	7
Scarlet fever	4
Tetanus	1
Tuberculosis	60
Tularæmia	1
Typhoid fever	1
Whooping cough	6

NEW YORK

(Exclusive of New York City)

	Cases
Cerebrospinal meningitis	1
Diphtheria	83
Influenza	22
Lethargic encephalitis	3
Measles	669
Pneumonia	213
Scarlet fever	186
Smallpox	9
Typhoid fever	8
Whooping cough	135

NORTH CAROLINA

Cerebrospinal meningitis	1
Chicken pox	58
Diphtheria	12
German measles	3
Measles	28
Ophthalmia neonatorum	1
Scarlet fever	10
Septic sore throat	2
Smallpox	56
Typhoid fever	16
Whooping cough	144

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Chicken pox	5
Diphtheria	1
Influenza	34
Measles	4
Mumps	9
Pneumonia	18
Scarlet fever	25
Smallpox	3
Typhoid fever	17
Whooping cough	25

OREGON

Cerebrospinal meningitis	1
Chicken pox	20
Diphtheria	
Portland	23
Scattering	4
Influenza	11
Measles	1
Mumps	6
Pneumonia	[1] 7
Scarlet fever	7
Smallpox	5
Tuberculosis	24
Typhoid fever	2
Whooping cough	16

SOUTH DAKOTA

Measles	2
Scarlet fever	7
Smallpox	3
Tuberculosis	2
Typhoid fever	1

TEXAS

Chicken pox	9
Diphtheria	3

[1] Deaths.

TEXAS—continued

	Cases
Dysentery (epidemic)	1
Influenza	4
Measles	24
Mumps	7
Paratyphoid fever	1
Pellagra	7
Pneumonia	3
Scarlet fever	2
Smallpox	11
Tuberculosis	1
Typhoid fever	2
Whooping cough	12

VERMONT

Chicken pox	22
Measles	19
Mumps	52
Scarlet fever	7
Whooping cough	4

VIRGINIA

Smallpox:	
Franklin County	1
Henry County	2

WASHINGTON

Cerebrospinal meningitis—Tacoma	1
Chicken pox	56
Diphtheria	9
German measles	18
Measles	5
Mumps	45
Scarlet fever	21
Smallpox	29
Tuberculosis	63
Typhoid fever	2
Whooping cough	99

WEST VIRGINIA

Diphtheria	6
Scarlet fever	15
Smallpox	12
Typhoid fever	3

WISCONSIN

Milwaukee:	
Cerebrospinal meningitis	2
Chicken pox	22
Diphtheria	12
German measles	60
Measles	211
Mumps	64
Pneumonia	23
Scarlet fever	21
Smallpox	26
Whooping cough	36
Scattering:	
Chicken pox	102
Diphtheria	13
German measles	256
Influenza	81
Lethargic encephalitis	1
Measles	296
Mumps	123
Pneumonia	19

WISCONSIN—continued

	Cases
Scattering—Continued	
Poliomyelitis	2
Scarlet fever	133
Smallpox	23
Tuberculosis	20
Typhoid fever	1
Whooping cough	94

WYOMING

	Cases
Chicken pox	14
Diphtheria	4
Influenza	1
Measles	4
Mumps	1
Scarlet fever	3
Whooping cough	13

Reports for Week Ended May 23, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	1
Chicken pox	36
Diphtheria	12
Dysentery	62
Influenza	60
Malaria	59
Measles	9
Mumps	37
Pellagra	39
Pneumonia	70
Poliomyelitis	3
Scarlet fever	34
Smallpox	92
Tetanus	1
Tuberculosis	51
Typhoid fever	45
Whooping cough	72

CALIFORNIA

	Cases
Cerebrospinal meningitis:	
San Francisco	1
Diphtheria	67
Influenza	23
Leprosy:	
Los Angeles County	1
Lethargic encephalitis	
San Francisco	1
Measles	41
Poliomyelitis:	
Alhambra	1
Los Angeles County	2
Monterey Park	1
San Francisco	2
San Gabriel	1
Scarlet fever	87
Smallpox:	
Berkeley	9
Los Angeles County	9
Oakland	17
San Diego	10
Scattering	36
Typhoid fever	8

DISTRICT OF COLUMBIA

	Cases
Chicken pox	11
Diphtheria	11
Lethargic encephalitis	1
Measles	35
Pneumonia	11
Scarlet fever	21
Smallpox	1
Tuberculosis	24
Whooping cough	19

GEORGIA

	Cases
Chicken pox	36
Diphtheria	13
Dysentery	126
Hookworm disease	3
Influenza	75
Malaria	51
Measles	15
Mumps	58
Pellagra	17
Pneumonia	45
Scarlet fever	5
Septic sore throat	15
Smallpox	31
Trichinosis	1
Tuberculosis	93
Typhoid fever	34
Whooping cough	85

INDIANA

	Cases
Cerebrospinal meningitis	2
Chicken pox	95
Diphtheria	21
Influenza	30
Measles	86
Mumps	13
Pneumonia	8
Scarlet fever:	
Clark County	9
Elkhart County	10
Marion County	8
St Joseph County	16
Vigo County	11
Scattering	56
Smallpox	57
Tuberculosis	48
Typhoid fever	8
Whooping cough	36

MINNESOTA

	Cases
Chicken pox	117
Diphtheria	83
Influenza	14
Lethargic encephalitis	1
Measles	61
Pneumonia	3
Poliomyelitis	1
Scarlet fever	215
Smallpox	23
Tuberculosis	53
Typhoid fever	2
Whooping cough	36

MISSISSIPPI

	Cases
Diphtheria	4
Scarlet fever	2
Smallpox	17
Typhoid fever	22

MISSOURI

(Exclusive of Kansas City)

	Cases
Cerebrospinl meningitis	1
Chicken pox	71
Diphtheria	64
Influenza	2
Malaria	2
Measles	37
Mumps	37
Pneumonia	10
Scarlet fever	173
Smallpox	10
Trachoma	1
Tuberculosis	76
Typhoid fever	3
Whooping cough	44

MONTANA

	Cases
Cerebrospinal meningitis	1
Chicken pox	12
Diphtheria	6
German measles	28
Leprosy	1
Measles	9
Mumps	28
Rocky Mountain spotted fever.	
Lasmas	1
Milltown	1
Saco	1
Scarlet fever	57
Smallpox	3
Tuberculosis	5
Typhoid fever	7
Whooping cough	8

NEBRASKA

	Cases
Chicken pox	15
Diphtheria	3
Measles	1
Mumps	3
Scarlet fever	7

NEBRASKA—continued

	Cases
Smallpox	25
Tuberculosis	2
Whooping cough	13

NORTH DAKOTA

	Cases
Chicken pox	14
Diphtheria	2
German measles	2
Measles	2
Mumps	25
Pneumonia	8
Scarlet fever	32
Smallpox	4
Tuberculosis	2
Typhoid fever	1
Whooping cough	10

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

	Cases
Cerebrospinal meningitis:	
Lincoln County	1
Chicken pox	14
Diphtheria	7
Influenza	63
Measles	6
Mumps	6
Pneumonia	22
Scarlet fever.	
Washington County	10
Scattering	19
Smallpox	12
Typhoid fever	14
Whooping cough	29

WYOMING

	Cases
Chicken pox	8
Diphtheria	10
Influenza	1
Measles	2
Mumps	10
Pneumonia	3
Rocky Mountain spotted fever	10
Scarlet fever	4
Tuberculosis	2
Whooping cough	24

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
March, 1925										
Tennessee	43	47	1,402	64	86	20		116	251	26
April, 1925										
Kansas	2	68	83	0	61	0	0	397	35	6
Mississippi	1	51	5,518	4,019	605	926	3	14	145	134
Missouri	1	264	160	5	79	0	1	1,061	61	24
Oregon	24	131	570		16			125	31	14
South Dakota		13	7		4		1	199	57	
Virginia	3	83	3,174	86	970	22	1	106	19	70
Washington	9	105	0	0	22	0	0	119	196	13
Wyoming	2	7	1		53			34	0	2

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named:

Los Angeles, Calif.

Week ended May 16, 1925:	
Number of rats examined	2,714
Number of rats found to be plague infected	4
Number of squirrels examined	976
Number of squirrels found to be plague infected	0
Totals, Nov. 5, 1924, to May 16, 1925:	
Number of rats examined	101,884
Number of rats found to be plague infected	186
Number of squirrels examined	13,677
Number of squirrels found to be plague infected	9

Date of discovery of last plague-infected rodent, May 26, 1925.
Date of last human case, Jan. 15, 1925.

Oakland, Calif.

(Including other East Bay communities)

Week ended May 16, 1925:	
Number of rats trapped	1,847
Number of rats found to be plague infected	0
Totals, Jan. 1 to May 16, 1925:	
Number of rats trapped	45,827
Number of rats found to be plague infected	21

Date of discovery of last plague-infected rat, Mar. 4, 1925.
Date of last human case, Sept. 10, 1919.

New Orleans, La.

Week ended May 16, 1925:	
Number of vessels inspected	305
Number of inspections made	745
Number of vessels fumigated with cyanide gas	24
Number of rodents examined for plague	6,679
Number of rodents found to be plague infected	0
Totals, Dec. 5, 1924, to May 16, 1925:	
Number of rodents examined for plague	102,987
Number of rodents found to be plague infected	12

Date of discovery of last plague-infected rat, Jan. 17, 1925.
Date of last human case occurring in New Orleans, Aug. 20, 1920.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended May 16, 1925, 35 States reported 1,254 cases of diphtheria. For the week ended May 17, 1924, the same States reported 1,540 cases of this disease. One hundred and three cities, situated in all parts of the country and having a population of nearly 28,800,000, reported 904 cases of diphtheria for the week ended May 16, 1925. Last year, for the corresponding week,

they reported 930 cases. The estimated expectancy for these cities was 929 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty-two States reported 5,161 cases of measles for the week ended May 16, 1925, and 10,997 cases of this disease for the week ended May 17, 1924. One hundred and three cities reported 3,444 cases of measles for the week this year and 4,015 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 34 States—this year, 2,971 cases; last year, 3,170; 103 cities—this year, 1,941; last year, 1,495; estimated expectancy, 973 cases.

Smallpox.—For the week ended May 16, 1925, 35 States reported 790 cases of smallpox. Last year, for the corresponding week, they reported 1,233 cases. One hundred and three cities reported smallpox for the week as follows: 1925, 252 cases; 1924, 527 cases; estimated expectancy, 104 cases. These cities reported 22 deaths from smallpox for the week this year.

Typhoid fever.—Two hundred and fifty-six cases of typhoid fever were reported for the week ended May 16, 1925, by 34 States. For the corresponding week of 1924 the same States reported 244 cases. One hundred and three cities reported 74 cases of typhoid fever for the week this year and 71 cases for the corresponding week last year. The estimated expectancy for these cities was 69 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 103 cities as follows: 1925, 764 deaths; 1924, 792 deaths.

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City reports for week ended May 16, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	73,129	3	2	0	2	0	0	23	2
New Hampshire:									
Concord	22,408	0	0	0	0	0	1	0	4
Vermont:									
Barre	[1] 10,008	0	0	0	0	0	0	2	0
Massachusetts:									
Boston	770,400		55	34	14	1	286		27
Fall River	120,912	6	3	3	0	0	0	0	2
Springfield	144,227	3	3	2	0	0	16	9	1
Worcester	191,927	20	4	2	0	0	49	0	3
Rhode Island:									
Pawtucket	68,799	1	1	0	0	0	1	0	1
Providence	242,378	0	11	6	0	0	4	0	9
Connecticut:									
Bridgeport	[1] 143,555	1	4	7	1	2	22	0	2
Hartford	[1] 138,036	2	6	8	1	0	2	3	3
New Haven	172,967	4	4	0	0	0	97	0	0
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	4	11	5	4	0	244	3	18
New York	5,927,625	191	256	296	24	16	187	44	165
Rochester	317,867	4	6	14	0	0	83	14	5
Syracuse	184,511	16	8	4	0	0	8	22	1
New Jersey:									
Camden	124,157	0	4	3	0	0	61	3	4
Newark	438,699	28	16	13	9	1	77	6	15
Trenton	127,390	3	4	0	0	0	6	0	1
Pennsylvania:									
Philadelphia	1,922,788	47	64	125		4	372	24	45
Pittsburgh	613,442	21	19	9		2	333	3	29
Reading	110,917	8	3	2	0	0	147	3	0
Scranton	140,636	1	3	4	0	0	0	0	10
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	7	7	5	0	0	2	0	3
Cleveland	888,519	63	20	29		5	10	2	23
Columbus	261,082	1	3	3		2	4	1	4
Toledo	268,338	18	4	3		2	114	1	3
Indiana:									
Fort Wayne	93,573	6	2	0	0	0	9	0	0
Indianapolis	342,718		6	2	0	0	13		9
South Bend	76,709	2	1	3	0	0	2	0	2
Terre Haute	68,939	4	1	0	0	0	27	0	1
Illinois:									
Chicago	2,886,121	68	102	53	12	4	652	33	70
Cicero	55,968	5	2	3	0	0	18	0	1
Springfield	61,833	3	1	0	1	0	35	36	2
Michigan:									
Detroit	995,668	38	48	28	0	3	15	15	29
Flint	117,968	8	3	4	0	0	30	1	2
Grand Rapids	145,947	0	3	2	0	1	123	2	2

[1] Population Jan. 1, 1920.

City reports for week ended May 16, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued									
Wisconsin:									
Madison	42,519	1	0	0	0	0	3	15	1
Milwaukee	484,595	32	12	16	0	0	209	59	17
Racine	64,393	7	1	1	0	0	0	16	3
Superior	[1] 39,671		1						
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	2	2	0	0	0	0	0	1
Minneapolis	409,125	41	15	26		2	16	6	5
St. Paul	241,891	37	13	17	0	0	8	19	8
Iowa:									
Davenport	61,262	0	1	2	0		0	0	
Sioux City	79,662	9	1	0	0		0	8	
Waterloo	39,667		0	0	0		1	1	
Missouri:									
Kansas City	351,819	11	7	5	2	2	3	22	7
St. Joseph	78,232	0	1	0	0	0	0	2	1
St. Louis	803,853	30	39	48	1	1	10	8	
North Dakota:									
Fargo	24,841	1	0	0	0	0	0	4	0
Grand Forks	14,547	2	0	0	0		0	0	
South Dakota:									
Aberdeen	15,829	0		1	0		0	0	
Sioux Falls	29,206		0						
Nebraska:									
Lincoln	58,761	15	1	3	0	0	0	1	1
Omaha	204,382	10	4	0	0	0	0	0	2
Kansas:									
Topeka	52,555	5	1	2	0	0	0	36	2
Wichita	79,261	18	1	3	0	0	0	0	0
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	2	1	5	0	0	4	1	0
Maryland:									
Baltimore	773,580	59	18	22	11	4	18	64	17
Cumberland	32,361	0	1	1	0	0	0	0	0
Frederick	11,301	0	0	0	0	0	0	0	0
District of Columbia:									
Washington	[1] 437,571	8	10	9	0	0	30	0	17
Virginia:									
Lynchburg	30,277	0	1	0	0	0	0	19	0
Norfolk	159,089	5	1	1	0	0	4	28	1
Richmond	181,044	10	1	1	0	0	25	1	6
Roanoke	55,502	1	1	0	0	0	16	0	3
West Virginia:									
Charleston	45,597	0	1	0	0	0	51	1	1
Huntington	57,918	0	0	0	0		0	0	
Wheeling	[1] 56,208	1	1	1	0	0	6	0	3
North Carolina:									
Raleigh	29,171	2	1	0		1	0	0	0
Wilmington	35,719	6	0	0	0	0	0	2	2
Winston-Salem	56,230	12	1	0	0	0	4	3	1
South Carolina:									
Charleston	71,245	0	0	0	0	0	0	0	0
Columbia	39,688	1	0	0	0		0	1	
Greenville	25,789	0	0	0	0	0	0	0	3
Georgia:									
Atlanta	222,963	24	1	1	12	0	0	3	10
Brunswick	15,937	0	0	0	0	0	0	0	0
Savannah	89,448	0	0	0	0	0	1	7	2
Florida:									
St. Petersburg	24,403	0	0	0	0	0	0	0	0
Tampa	56,050	1	1	1	0	0	0	0	1

[1] Population Jan. 1, 1920

City reports for week ended May 16, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	1	2	0	1	0	0	3
Louisville	257,671	1	4	2	2	2	6	1	9
Tennessee:									
Memphis	170,067	11	3	1		3	6	5	2
Nashville	121,128	1	1	0		3	15	1	4
Alabama:									
Birmingham	195,901	12	1	1	14	5	2	2	7
Mobile	63,858	1	0	0	0	0	0	1	3
Montgomery	45,383	3	1	0	0	0	0	9	1
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	0	1	0	0		0	2	
Little Rock	70,916	1	1	0	0	0	0	0	1
Louisiana:									
New Orleans	404,575	2	7	7		3	2	0	9
Shreveport	54,590	3		1	0	0	0	1	1
Oklahoma:									
Oklahoma	101,150	3	1	1	2	1	1	0	2
Texas:									
Dallas	177,274		3	3	0	0	1		4
Galveston	46,877	0	0	0	0	0	0	0	0
Houston	154,970	1	3	1	0	0	0	0	0
San Antonio	184,727	2	1	0		1	0	0	7
MOUNTAIN									
Montana:									
Billings	16,927	0	0	0	0	0	1	15	0
Great Falls	27,787	0	1	1	0	0	0	7	0
Helena	[1] 12,037	0	0	0	0	0	0	0	0
Missoula	[1] 12,668	0	0	0	0	0	1	0	2
Idaho:									
Boise	22,806	1	0	0	0	0	0	0	0
Colorado:									
Denver	272,031	7	10	15		5	3	41	10
Pueblo	43,519	1	1	0		1	1	0	2
New Mexico:									
Albuquerque	16,648	1	1	0	0	0	0	4	0
Arizona:									
Phoenix	33,899	0	0	0		1	1	0	0
Utah:									
Salt Lake City	126,241	23	3	0	0	0	0	35	2
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	1
PACIFIC									
Washington:									
Seattle	[1] 315,685	39	5	5	0		1	65	
Spokane	104,573	6	2	5	0		0	0	
Tacoma	101,731		1						
California:									
Los Angeles	666,853	36	33	23	4	2	46	22	16
Sacramento	69,950	0	2	0	0	0	0	1	1
San Francisco	539,038	20	24	12	4	1	11	36	2

[1] Population Jan. 1, 1920.

City reports for week ended May 16, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	1	2	0	0	0	0	1	0	0	2	21
New Hampshire:											
Concord	0	1	0	0	0	0	0	0	0	0	11
Vermont:											
Barre	1	0	0	0	0	0	0	0	0	0	4
Massachusetts:											
Boston	52	66	0	0	0	18	2	1	0		216
Fall River	3	6	0	0	0	2	0	2	0	8	30
Springfield	6	22	0	0	0	0	0	0	0	14	33
Worcester	7	12	0	0	0	4	0	0	0	9	65
Rhode Island:											
Pawtucket	1	3	0	0	0	0	0	0	0	1	25
Providence	11	12	0	0	0	4	0	0	0	0	79
Connecticut:											
Bridgeport	5	10	0	0	0	0	0	0	0	4	28
Hartford	4	3	0	0	0	2	1	0	0	14	37
New Haven	5	7	0	0	0	2	1	2	0	34	42
MIDDLE ATLANTIC											
New York:											
Buffalo	18	18	0	1	0	13	1	0	0	26	142
New York	208	293	0	3	0	[1] 123	11	14	8	126	1,520
Rochester	13	40	0	0	0	3	1	0	0	14	60
Syracuse	12	5	0	0	0	2	0	0	0	3	46
New Jersey:											
Camden	3	14	0	3	1	2	0	0	0	2	32
Newark	20	23	0	0	0	10	1	0	0	63	111
Trenton	2	2	0	0	0	1	0	0	0	9	36
Pennsylvania:											
Philadelphia	74	166	0	7	1	56	5	4	1	63	536
Pittsburgh	23	81	0	0	0	14	1	0	0	15	174
Reading	2	12	0	0	0	0	0	1	0	1	24
Scranton	2	3	0	0	0	0	0	0	0	4	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	11	17	2	0	0	6	1	1	0	8	122
Cleveland	21	26	1	1	0	12	2	0	0	41	190
Columbus	5	13	2	4	0	3	1	0	0	6	88
Toledo	14	15	4	0	0	7	1	0	0	24	74
Indiana:											
Fort Wayne	2	6	3	0	0	1	0	0	0	0	22
Indianapolis	16	6	6	7	0	6	0	0	1		84
South Bend	3	5	0	0	0	0	0	0	0	0	16
Terre Haute	2	6	1	2	0	0	0	0	0	0	16
Illinois:											
Chicago	70	235	2	2	0	44	3	5	0	96	642
Cicero	1	13	0	0	0	1	0	0	0	6	5
Springfield	2	8	1	1	0	1	1	0	0	1	28
Michigan:											
Detroit	76	124	9	0	0	20	3	1	0	124	247
Flint	5	4	2	0	0	1	0	0	0	10	30
Grand Rapids	6	50	1	1	0	4	0	0	0	5	35
Wisconsin:											
Madison	2	1	1	0	0	1	0	0	0	15	10
Milwaukee	28	17	1	57	13	5	1	1	0	30	128
Racine	5	7	2	1	0	0	0	0	0	1	6
Superior	2		2				1				9

[1] Pulmonary tuberculosis only.

City reports for week ended May 16, 1925—**Continued**

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL											
Minnesota:											
Duluth	3	19	1	0	0	0	1	0	0	1	17
Minneapolis	27	112	7	10	4	9	1	0	0	2	110
St. Paul	18	43	5	7	2	6	0	0	1	28	61
Iowa:											
Davenport	2	0	5	1			0	0		0	
Sioux City	3	0	1	0			0	0		0	
Waterloo	2	0	0	2			0	0		2	
Missouri:											
Kansas City	9	62	3	1	0	9	1	0	0	10	80
St. Joseph	2	6	0	0	0	0	0	0	0	4	27
St. Louis	30	95	2	8	0	8	1	0	0	17	212
North Dakota:											
Fargo	1	5	1	0	0	0	0	0	0	4	6
Grand Forks	1	1	0	0			0	0		0	
South Dakota:											
Aberdeen	1	3	0	0			0	0		3	
Sioux Falls	1		0				0				
Nebraska:											
Lincoln	2	0	1	0	0	0	0	0	0	9	13
Omaha	5	2	3	10	0	0	0	0	0	4	59
Kansas:											
Topeka	2	3	0	0	0	0	0	0	0	4	8
Wichita	2	2	3	0	0	0	0	0	0	31	26
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	0	0	0	0	1	0	0	0	2	28
Maryland:											
Baltimore	25	43	0	2	0	19	3	2	0	103	237
Cumberland	1	0	0	0	0	1	1	0	0	0	9
Frederick	2	1	0	0	0	1	0	0	0	0	3
District of Columbia:											
Washington	17	24	2	3	0	13	1	1	0	19	125
Virginia:											
Lynchburg	1	4	0	1	0	0	0	2	0	12	4
Norfolk	1	1	0	0	0	1	0	0	0	6	
Richmond	3	0	0	0	0	3	1	1	0	9	52
Roanoke	1	0	1	0	0	0	0	0	0	0	9
West Virginia:											
Charleston	1	1	0	2	0	0	0	0	0	1	12
Huntington	1	6	0	10			0	0		0	
Wheeling	2	4	0	0	0	0	1	0	0	1	17
North Carolina:											
Raleigh	1	0	0	1	0	2	0	0	0	0	15
Wilmington	0	0	0	3	0	1	0	0	0	0	16
Winston-Salem	1	0	3	4	0	2	0	0	0	2	20
South Carolina:											
Charleston	0	0	0	0	0	6	1	2	0	0	36
Columbia	0	0	0	0			1	0		3	
Greenville	0	0	0	2	0	1	1	1	0	0	12
Georgia:											
Atlanta	3	3	6	0	0	4	0	3	0	15	83
Brunswick	0	0	0	0	0	0	1	1	0	0	3
Savannah	0	0	0	0	0	4	1	0	0	2	24
Florida:											
St. Petersburg	0	0	0	0	0	1	0	0	1	0	11
Tampa	0	0	0	0	0	0	1	0	1	0	17
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	2	0	0	0	1	0	0	0	1	19
Louisville	3	24	1	0	0	8	2	1	0	10	
Tennessee:											
Memphis	4	6	2	4	0	8	1	4	0	17	56
Nashville	1	9	1	4	0	8	1	0	0	1	46
Alabama:											
Birmingham	2	16	0	24	0	5	1	2	2	2	76
Mobile	0	0	1	0	0	0	0	3	0	0	23
Montgomery	0	0	1	1	0	0	0	1	0	0	17

City reports for week ended May 16, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	1	1	0			0	0		2	
Little Rock	1	1	1	0	0	2	0	1	0	0	
Louisiana											
New Orleans	3	12	3	1	0	10	3	14	0	4	146
Shreveport		0		1	0	0		0	0	0	20
Oklahoma.											
Oklahoma	2	0	4	0	0	1	0	4	0	2	23
Texas:											
Dallas	2	2	3	1	0	4	0	0	1		40
Galveston	0	0	1	0	0	0	1	1	1	0	7
Houston	1	0	0	5	0	2	0	0	0	0	55
San Antonio	0	0	0	0	0	4	0	1	0	0	64
MOUNTAIN											
Montana:											
Billings	1	3	1	0	0	0	0	0	0	0	7
Great Falls	1	13	2	0	0	0	0	0	0	2	6
Helena	1	0	0	0	0	0	0	0	0	0	2
Missoula	1	2	0	0	0	0	0	0	0	1	9
Idaho											
Boise	1	1	0	0	0	0	0	0	0	0	2
Colorado.											
Denver	11	13	1	0	0	12	0	0	0	12	81
Pueblo	1	2	0	0	0	2	1	0	0	0	8
New Mexico											
Albuquerque	1	0	0	0	0	4	0	0	0	0	8
Arizona											
Phoenix	0	3	0	0	0	6	0	0	0	0	14
Utah											
Salt Lake City	2	3	0	0	0	1	0	0	0	3	32
Nevada:											
Reno	0	0	0	3	0	0	0	0	0	0	1
PACIFIC											
Washington:											
Seattle	7	10	3	26			0	0		98	
Spokane	4	0	5	2			0	0		24	
Tacoma	2		1				0				
California:											
Los Angeles	13	36	1	27	0	18	2		1	61	214
Sacramento	2	1	0	2	0	2	0	0	0	3	28
San Francisco	14	17	2	5	1	9	1	1	0	42	140

City reports for week ended May 16, 1925—**Continued**

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	Cases	Deaths
NEW ENGLAND											
Massachusetts:											
Springfield	0	0	0	1	0	0	0	0	0	0	0
Rhode Island:											
Providence	1	0	0	0	0	0	0	0	0	0	0
MIDDLE ATLANTIC											
New York:											
New York	0	1	3	2	0	0	1	2	0	1	0
Pennsylvania:											
Philadelphia	0	0	1	1	0	0	0	0	0	0	0
EAST NORTH CENTRAL											
Ohio:											
Cleveland	2	1	0	0	0	0	0	0	0	0	0
Indiana:											
Indianapolis	0	2	0	0	0	0	0	0	0	0	0
Illinois:											
Chicago	2	2	0	0	1	0	0	0	1	0	0
Michigan:											
Detroit	0	0	2	0	0	0	0	1	0	0	0
Wisconsin:											
Milwaukee	1	0	0	0	0	0	0	0	0	0	0
Superior	0	0	0	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL											
Missouri:											
St. Louis	1	0	0	0	0	0	0	0	0	0	0
SOUTH ATLANTIC											
Maryland:											
Baltimore	0	1	0	0	0	1	0	0	0	0	0
Virginia:											
Norfolk	0	0	0	0	1	1	0	0	0	0	0
North Carolina:											
Raleigh	0	0	0	0	0	2	0	0	0	0	0
Georgia:											
Atlanta	0	0	0	0	0	1	0	0	0	0	0
Savannah	0	0	0	0	1	1	0	0	0	0	0
EAST SOUTH CENTRAL											
Alabama:											
Mobile	0	0	0	0	0	1	0	0	0	0	0
WEST SOUTH CENTRAL											
Arkansas:											
Little Rock	0	0	0	0	1	0	0	0	0	0	0
Louisiana:											
New Orleans	0	0	1	1	1	2	0	0	0	0	0
Shreveport	0	0	0	0	0	1	------	0	0	0	0
Texas:											
Dallas	0	0	0	0	1	1	0	0	0	0	0
Houston	0	0	0	0	0	0	0	1	0	0	0
San Antonio	0	0	0	1	0	1	0	0	0	0	0
MOUNTAIN											
Colorado:											
Denver	0	0	0	1	0	0	0	0	0	0	0
Utah:											
Salt Lake City	0	1	0	0	0	0	0	0	0	0	0
PACIFIC											
California:											
Los Angeles	0	2	0	0	0	0	0	1	0	0	0
San Francisco	0	0	0	0	0	0	0	1	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended May 16, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000, and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, March 8 to May 16, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16
105 cities	167	167	[2] 168	177	158	160	162	158	[2] 157	[3] 164
New England	176	147	119	171	166	129	144	127	109	154
Middle Atlantic	214	196	231	241	220	228	218	213	212	238
East North Central	128	134	112	93	96	110	113	110	113	110
West North Central	201	199	247	220	226	168	187	201	278	[4] 212
South Atlantic	91	136	95	81	73	102	108	104	104	85
East South Central	40	69	57	23	34	46	40	40	11	34
West South Central	158	97	121	83	107	74	79	70	65	56
Mountain	105	143	134	124	105	239	267	115	105	153
Pacific	197	249	[3] 179	374	171	168	165	206	[2] 123	[5] 138

MEASLES CASE RATES

	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16
105 cities	449	506	[2] 507	558	531	589	645	581	[2] 627	[3] 624
New England	542	725	755	957	1,011	917	1,217	1,004	984	1,188
Middle Atlantic	518	598	633	734	680	815	782	734	797	768
East North Central	740	775	798	736	710	742	901	761	890	854
West North Central	75	93	89	77	58	91	102	79	112	[4] 80
South Atlantic	146	189	136	209	207	256	295	305	240	329
East South Central	11	69	34	69	34	97	189	200	343	166
West South Central	88	42	9	88	51	65	37	28	32	14
Mountain	763	573	38	219	57	267	219	534	181	57
Pacific	110	189	[3] 151	209	241	154	203	162	[2] 95	[5] 178

SCARLET FEVER CASE RATES

	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16
105 cities	432	427	[2] 419	409	367	342	360	309	[2] 323	[3] 352
New England	534	544	604	534	529	350	407	430	415	358
Middle Atlantic	439	417	405	436	359	343	336	323	319	331
East North Central	497	498	483	442	422	403	433	324	366	399
West North Central	719	792	755	736	647	651	692	518	618	[4] 734
South Atlantic	219	146	167	175	152	167	175	132	106	165
East South Central	355	286	286	263	280	229	257	263	203	326
West South Central	107	134	102	51	88	60	121	111	88	74
Mountain	200	429	248	277	258	315	401	334	277	353
Pacific	229	218	[3] 222	191	174	145	148	125	[2] 151	[5] 197

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Spokane, Wash., not included. Report not received at time of going to press.
[3] Sioux Falls, S. Dak., and Tacoma, Wash., not included.
[4] Sioux Falls, S. Dak., not included.
[5] Tacoma, Wash., not included.

Summary of weekly reports from cities, March 8 to May 16, 1925—Annual rates per 1,000 population—Continued

SMALLPOX CASE RATES

	Week ended—									
	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16
105 cities	61	63	[2] 58	57	51	48	62	50	[2] 46	[3] 46
New England	0	0	0	12	2	0	2	0	2	0
Middle Atlantic	5	8	7	21	10	18	12	8	6	7
East North Central	39	32	33	24	22	27	39	30	44	56
West North Central	124	102	135	87	97	85	89	75	60	[4] 80
South Atlantic	59	57	67	49	43	53	79	63	45	37
East South Central	446	646	423	42	572	395	457	435	377	189
West South Central	74	107	107	46	51	14	42	32	28	37
Mountain	95	67	19	19	19	10	29	10	48	29
Pacific	247	212	[2] 191	255	148	162	264	206	[2] 176	[5] 191

TYPHOID FEVER CASE RATES

	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16
105 cities	10	12	[2] 11	9	10	12	16	18	[2] 14	[3] 13
New England	5	30	12	5	2	7	17	10	5	12
Middle Atlantic	5	8	7	4	9	11	14	22	13	10
East North Central	4	7	3	4	6	4	7	4	9	6
West North Central	10	8	6	2	2	2	6	12	2	[4] 0
South Atlantic	24	22	12	30	20	12	14	28	28	26
East South Central	34	46	57	17	17	34	80	46	46	63
West South Central	28	23	42	32	37	56	51	51	46	79
Mountain	19	0	0	0	19	38	29	0	0	0
Pacific	15	0	[2] 28	20	9	12	23	17	[2] 9	[5] 3

INFLUENZA DEATH RATES

	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16
105 cities	34	42	33	34	27	27	30	22	15	[4] 14
New England	35	30	30	35	32	27	30	20	10	7
Middle Atlantic	24	29	22	21	16	24	17	14	10	12
East North Central	33	49	40	38	27	24	33	23	16	11
West North Central	33	42	46	39	37	50	48	31	11	[4] 11
South Atlantic	33	53	12	28	26	12	43	26	24	10
East South Central	91	120	86	69	74	80	86	51	51	80
West South Central	107	76	36	36	46	36	25	31	15	20
Mountain	48	48	38	181	86	38	76	48	19	57
Pacific	16	12	53	29	12	29	12	12	16	12

PNEUMONIA DEATH RATES

	Mar. 14	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16
105 cities	222	217	206	204	201	192	203	167	151	[4] 127
New England	229	211	219	251	211	206	186	149	161	134
Middle Atlantic	214	217	199	215	190	204	223	206	185	143
East North Central	241	222	214	182	190	190	211	148	130	125
West North Central	175	173	166	193	228	171	136	72	77	[4] 58
South Atlantic	246	290	252	231	238	232	191	195	156	136
East South Atlantic	366	286	269	269	343	206	286	194	160	166
West South Central	178	178	168	168	168	173	158	127	138	112
Mountain	210	172	200	162	267	210	219	124	124	162
Pacific	155	131	159	159	119	98	147	127	123	78

[2] Spokane, Wash., not included. Report not received at time of going to press.
[3] Sioux Falls, S. Dak., and Tacoma, Wash., not included.
[4] Sioux Falls, S. Dak., not included.
[5] Tacoma, Wash., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

FOREIGN AND INSULAR

THE FAR EAST

Wireless health news messages.—The following data were sent by wireless from the far eastern bureau of the health section of the League of Nations located at Singapore, to headquarters at Geneva, Switzerland:

Week ended Saturday, May 9, 1925

Port	Plague		Cholera		Smallpox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Calcutta	-------	0	-------	49	107	100
Bombay	-------	4	-------	0	14	18
Madras	-------	0	-------	0	41	18
Rangoon	-------	24	-------	5	63	24
Karachi	-------	3	-------	0	7	3
Negapatam	-------	0	-------	0	0	0
Singapore [1]	6	6	0	0	0	0
Penang	0	0	0	0	0	0
Batavia	0	0	0	0	0	0
Soerabaya	0	0	0	0	1	-------
Samarang	0	0	0	0	0	0
Belawan Deli	0	0	0	0	0	0
Macassar	0	0	0	0	0	0
British North Borneo	0	0	0	0	0	0
Bangkok	1	1	0	0	1	-------
Saigon and Cholon	0	0	0	1	-------	-------
Hongkong [1]	-------	-------	-------	-------	-------	-------
Shanghai [2]	-------	-------	-------	-------	-------	-------
Nagasaki	0	0	0	0	3	-------
Manila	0	0	0	0	0	0
Kobe	0	0	0	0	0	0
Shimonoseki	0	0	0	0	0	0
Yokohama	0	0	0	0	0	0

[1] Infected rats found.
[2] Report not received for week ended May 9, 1925.

CANADA

Mosquito destruction—Fredericton, Nova Scotia.—Information received under date of April 30, 1925, shows that measures for the destruction of mosquitoes have been put into effect at Fredericton, Nova Scotia, Canada. The ponds and marshes in the vicinity of the city have been sprayed with oil.

CZECHOSLOVAKIA

Communicable diseases—January-March, 1925.—During the period January 1 to March 31, 1925, communicable diseases were notified in Czechoslovakia as follows:

Disease	Cases	Deaths	Province showing greatest number of cases and deaths
Anthrax	8	1	Bohemia, cases, 4; Russinia, 1 death.
Cerebrospinal meningitis	62	18	Slovakia, cases, 22, deaths, 2
Diphtheria	1,101	83	Bohemia, cases, 544, deaths, 52
Dysentery	72	2	Slovakia, cases, 23, Bohemia, deaths, 2.
Malaria	8		Bohemia, cases, 4.
Paratyphoid fever A	2		Bohemia.
Paratyphoid fever B	21		Do.
Scarlet fever	2,683	84	Bohemia, cases, 1,311; deaths, 45.
Trachoma	651		Moravia, cases, 211.
Typhoid fever	1,280	126	Slovakia, cases, 474, deaths, 38
Typhus fever	54	2	Russinia, cases, 53, deaths, 2.

Typhus fever outbreak.—The occurrence during the period under report of 54 cases of typhus fever with 2 deaths, indicates unusual conditions in the prevalence of this disease, only 8 cases having been reported during the preceding 6-month period. From December 31, 1924, to the latter part of March, 1925, 28 cases of typhus fever were reported from the small town of Smerekov and its immediate vicinity. As the town is situated 8 miles from the main lines of travel it was quickly isolated by the health authorities and placed in charge of a divisional unit operating in the section of the Republic. No workers were permitted to leave the town.

JAVA

Further relative to epidemic malaria—Soerabaya.[1]—Reports of the prevalence of epidemic malaria among natives at Kedamean, Soerabaya Residency, Java, have been received as follows: Week ended February 2, 1925, 1,752 cases with 19 deaths; week ended March 2, 1925, 449 cases with 8 deaths; week ended March 9, 1925, 72 cases with 9 deaths. For the week ended March 16, only 17 cases were reported, with 1 death. During a period of 4 months, 6,000 cases of malaria were reported at Kedamean.

MADAGASCAR

Plague—March 1-15, 1925.—During the period March 1 to 15, 1925, 104 cases of plague with 87 deaths were reported in the island of Madagascar, occurring in the Provinces of Itasy, Moramanga, and Tananarive. Of the cases, 65 were stated to be bubonic, 14 pneumonic, and 25 septicemic in type. For distribution according to Province, see page 1224.

MEXICO

Cerebrospinal meningitis—State of Morelos—Epidemic stated to have ceased.—Under date of May 16, 1925, epidemic prevalence of cerebrospinal meningitis in the State of Morelos, Mexico,[1] was stated to have ceased. A few sporadic cases were reported on the date quoted at Cuernavaca.

[1] Public Health Reports, May 1, 1925, p. 916.

UNION OF SOUTH AFRICA

Smallpox—Typhus fever—March, 1925.—During the month of March, 1925, 9 cases of smallpox, of which 3 cases were in the white and 6 in the native population, and 41 cases of typhus fever with 7 deaths, of which 5 cases were in the European population, were reported in the Union of South Africa. For distribution of occurrence of typhus fever according to locality, see page 1225.

VIRGIN ISLANDS

Communicable diseases—April, 1925.—During the month of April, 1925, communicable diseases were reported in the Virgin Islands of the United States as follows:

Island and disease	Cases	Remarks	Island and disease	Cases	Remarks
St. Thomas and St. John			St. Croix.		
Chancroid	1		Chicken pox	1	
Dengue	20		Filariasis	13	Bancrofti.
Dysentery	2	Unclassified.	Leprosy	2	
Gonorrhea	5	1 St. John	Malaria	2	Malignant tertian.
Malaria	1	St. John. Benign tertian.	Syphilis	1	Secondary.
Syphilis	1	Secondary.	Trachoma	1	
Tetanus	2		Tuberculosis	3	Chronic pulmonary.

[1] Public Health Reports, May 8, 1925, p 972.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended June 5, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India:				
Calcutta	Apr. 5-11	52	48	
Madras	Apr. 19-25	1	1	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Egypt				Jan 1-Apr 29, 1925: Cases, 24; deaths, 14.
City—				
Suez	Apr. 2-22	2	2	
Province—				
Beni-Souef	Jan. 18	1	1	
Dakhalia	Jan. 7	1	1	
Fayoum	Apr. 5-14	3	2	
Guergeh	Jan. 9-Apr. 5	2	2	
Kalioubiah	Jan. 5-Apr. 22	5	2	
Menoufieh	Jan. 1-Apr. 9	8	4	
Minia	Apr. 1-5	2		
India:				
Karachi	Apr. 19-25		1	
Madras Presidency	do	27	16	
Madagascar				Mar. 1-15, 1925: Cases, 104; deaths, 87. Bubonic, 65; pneumonic. 14; septicemic, 25.
Itasy Province	Mar. 1-15	3	3	
Moramanga Province	do	2	2	
Tananarive Province	do	99	82	
Tananarive town	do	3	3	Pneumonic.
Other localities	do	96	79	
Straits Settlements.				
Singapore	Apr 5-11	2	1	

[1] From medical officers of the Public Health Service, American consuls, and other sources

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended June 5, 1925—Continued

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria:				
Algiers	Apr. 1-30	6		
Brazil:				
Porto Alegre	Apr. 12-18		1	
British South Africa:				
Northern Rhodesia	Mar. 17-Apr. 14	9		
Canada:				
British Columbia—				
Vancouver	May 4-17	5		
Ceylon:				
Colombo	Apr. 12-18	1		Port case.
China				
Amoy	Apr. 5-18		8	Prevalent in surrounding district.
Antung	Apr. 12-26	5		
Canton	Apr. 12-18			Present.
Chungking	Apr. 5-11			Prevalent.
Foochow	Apr. 5-18			Present.
Manchuria—				
Dairen	Mar. 16-Apr. 5	14	3	
Harbin	Apr. 15-21	1		
Nanking	Mar. 29-Apr. 18			Prevalent.
France:				
Boulogne-sur-Mer	Apr 1-30	1	1	
Gibraltar	May 4-10	2		
Great Britain				
Newcastle-on-Tyne	May 3-9	3		
India:				
Calcutta	Apr 5-11	404	313	
Karachi	Apr 19-25	5	2	
Madras	do	64	27	
Indo-China.				
Saigon	Mar 29-Apr. 4	8	2	Including 100 square kilometers of surrounding country.
Japan:				
Taihoku	Apr 4-10	1		
Mexico				
Guadalajara	May 12-18		3	
Mexico City	Apr 26-May 2	7		Including municipalities in Federal district.
Persia				
Teheran	Feb 19-Mar. 19		9	
Spain:				
Malaga	May 3-9		4	
Switzerland:				
Berne	Apr 12-18	1		
Turkey:				
Constantinople	Apr 16-30	3		
Union of South Africa				Mar. 1-31, 1925: Cases, 9; white, 3; native, 6.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Chile:				
Concepcion	Apr. 14-20		1	
Valparaiso	Apr. 5-25		3	
China				
Manchuria—				
Harbin	Apr 8-14	1		
Czechoslovakia				January-March, 1925: Cases, 54; deaths, 2.
Egypt:				
Alexandria	Apr. 2-8	1		
Greece				
Saloniki	Mar. 31-Apr. 20	2		
Mexico.				
Mexico City	Apr. 26-May 2	9		Including municipalities in Federal district.
Turkey:				
Constantinople	Apr. 24-30	1		
Union of South Africa				Mar. 1-31, 1925: Cases, 41; deaths, 7. Native—cases, 36; deaths, 7. White or European—cases, 5.
Cape Province				Mar. 1-31, 1925. Cases, 17; deaths, 3.
Natal				Mar. 1-31, 1925: Cases, 6; deaths, 2.
Orange Free State				Mar. 1-31, 1925; Cases, 9; deaths, 2.
Transvaal				Mar. 1-31, 1925: Cases, 4
Yugoslavia:				
Belgrade	Apr. 24-30	2		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 29, 1925[1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Dec. 27, 1924. Cases, 14; deaths, 13 Dec. 28, 1924-Jan. 24, 1925: Cases, 24; deaths, 17.
Colombo	Nov. 16-22	1		
Do	Jan. 11-24	2	2	
India				Oct. 19, 1924, to Jan 3, 1925: Cases, 27,164; deaths, 16,228. Jan. 4-Mar. 29, 1925: Cases 26,127; deaths, 15,462.
Bombay	Nov. 23-Dec. 20	4	4	
Do	Jan. 18-24	1	1	
Calcutta	Oct 26-Jan. 3	59	51	
Do	Jan. 4-Mar. 21	205	164	
Do	Mar. 29-Apr. 4	49	46	Reported to be epidemic May 9, 1925.
Madras	Nov 16-Jan. 3	69	40	
Do	Jan. 4-Mar. 7	139	99	
Do	Apr. 5-18	3	1	
Rangoon	Nov. 9-Dec. 20	9	2	
Do	Jan. 4-Apr. 11	20	13	
Indo-China				Aug 1-Sept. 30, 1924: Cases, 14; deaths, 10. Dec 1-31, 1924: Cases, 5, deaths, 2.
Province—				
Anam	Aug 1-31	1	1	
Cambodia	Aug. 1-Sept. 30	6	5	
Do	Dec 1-31	1		
Cochin-China	Aug 1-Dec 31	10	5	
Saigon	Nov 30-Dec. 6	1		
Do	Mar. 15-21	1	1	
Tonkin	Dec. 1-31	1	1	
Siam.				
Bangkok	Nov 9-29	4	2	
Do	Jan. 18-Mar. 21	8	5	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores				
Fayal Island—				
Castelo Branco	Nov 25			Present with several cases.
Feteira	do	1		
St Michael Island	Nov 2-Jan. 3	30	13	
Do	Jan. 18-24	3	1	
Brazil:				
Bahia	Jan 4-Apr. 18	11	7	
Santos	Year, 1924	2		Bubonic.
British East Africa:				
Tanganyika Territory	Nov. 23-Dec 27	17	10	
Do	Jan 18-Mar 14	18	12	
Uganda	Aug.-Dec., 1924	279	243	
Do	Jan 1-31	29	28	
Canary Islands.				
Las Palmas	Jan. 21-23	2		Stated to be endemic.
Do	Feb 4	1		Stated to have been infected with plague Sept 30, 1924.
Do	Mar. 26	1	1	
Realejo Alto	Dec 19	3	1	Vicinity of Santa Cruz de Teneriffe
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.
Celebes				
Macassar	Oct. 29			Epidemic.
Ceylon				
Colombo	Nov 9-Jan. 3	12	9	
Do	Jan 4-Apr. 11	21	21	
China:				
Foochow	Dec. 28-Jan. 3			Present.
Nanking	Nov 23-Mar. 7			Do.
Shing Hsien	October, 1924		790	
Ecuador				Mar. 16-Apr 15, 1925. Cases, 10; deaths, 4.
Chimborazo Province—				
Alausi District	Jan. 14		14	At 2 localities on Guayaquil & Quito Ry.
Daule	Mar. 16-31	1		
Guayaquil	Nov. 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92
Do	Jan. 1-Apr. 15	68	29	Rats taken, 67,317; found infected, 294.
Naranjito	Feb 16-Mar. 15	1		
Yaguachi	Feb. 1-Mar. 15	2	1	
Egypt				Year 1924: Cases, 373. Jan. 1-Apr 22, 1925: Cases, 24; deaths, 14.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 29, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Gold Coast				September - December, 1924: Deaths, 52.
Greece.				
Patras	Apr. 5	1		
Hawaii.				
Honokaa	Nov 4	1		Plague-infected rodents found Dec. 9, 1924, Jan 15—Apr. 28 and 30, 1925. Vicinity Pacific Sugar Mill, Island of Hawaii.
India				Oct. 19, 1924, to Jan 3, 1925: Cases, 28,154; deaths, 21,505. Jan 4-Mar 28, 1925. Cases, 57,672; deaths, 48,562.
Bombay	Nov. 22-Jan. 3	4	3	
Do	Jan. 4-17	2	2	
Do	Feb. 8-Apr 4	56	47	
Calcutta	Jan 18-24	1	1	
Karachi	Nov. 30-Dec. 6	2	1	
Do	Jan. 4-Feb. 21	12	11	
Do	Mar. 29-Apr 18	6	6	
Madras Presidency	Nov. 23-Jan. 3	685	487	
Do	Jan 4-24	658	511	
Do	Mar 8-14	80	48	
Rangoon	Oct. 26-Jan 3	26	25	
Do	Jan 4-Apr. 11	187	164	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 25; deaths, 20. Dec. 1-31, 1924: Cases, 11; deaths, 11. Corresponding month, 1923: Cases, 15, deaths, 5.
Province—				
Anam	Aug 1-Sept. 30	4	4	
Do	Dec 1-31	5	5	
Cambodia	Aug 1-Sept 30	18	15	
Do	Dec 1-31	6	6	
Cochin-China	do	3	1	
Saigon	Dec. 25-31	1	1	Including 100 square kilometers of surrounding territory.
Do	Jan. 11-17	2	1	Do.
Iraq	June 29-Jan 3	20	14	
Bagdad	Mar 22-28	1	1	
Japan	Aug 10-Dec. 6	19		
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri; epidemic.
Pare	Nov 29			Do.
Samarang	Mar. 22-28	2	2	
Sidoardja	Jan 2			Declared epidemic, Province of Soerabaya.
Soerabaya	Nov 16-Dec. 31	71	72	
Do	Jan. 15-Mar. 25	25	22	Mar. 29-Apr. 4, 1925: 2 plague rats found
Soerakarta	Feb. 20			Epidemic plague in one locality.
West Java—				
Cheribon	Oct 14-Nov. 3		14	
Do	Nov. 18-Dec 22		80	
Do	Jan 1-14		44	
Do	Feb. 5-11		13	
Do	Feb 19-25		13	
Do	Mar. 5-11		14	
Pasoeroean	Dec. 27			Province. Epidemic in one locality.
Pekalongan	Oct 14-Nov. 3		29	
Do	Nov. 18-Dec. 31		177	Pekalongan Province.
Do	Jan 1-14		81	
Do	Feb. 5-11		36	
Do	Feb. 19-25		38	
Do	Mar. 5-11		28	
Probalingga	Dec. 27			Province. Epidemic.
Tegal	Oct. 14-Dec 31		26	
Do	Jan. 1-14		37	Pekalongan Province.
Do	Feb. 5-11		7	
Do	Feb 19-25		10	
Do	Mar. 5-11		3	
Madagascar:				
Fort Dauphin (port)	Nov. 1-Dec 15	12	5	
Do	Feb. 1-15	1	1	Bubonic.
Itasy Province	Nov 1-Dec. 15	4	2	
Do	Feb. 1-28	3	3	
Majunga (port)	Nov. 1-30	1	1	
Moramanga Province				Nov. 1-Dec. 15, 1924: Cases, 49; deaths, 34. Jan. 16-Feb. 28, 1925: Cases, 6; deaths, 6.
Tamatave (port)	Nov. 1-30	1	1	
Tananarive Province				Oct 16-Dec. 31, 1924: Cases, 298; deaths, 274.
Do				Jan. 1-Mar. 15: Cases, 456; deaths, 387
Tananarive (town)	Mar. 1-15	3		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 29, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Mauritius Island				Year 1924: Cases, 161; deaths, 144.
District—				
Flacq	Dec. 1-31	5	4	
Pamplemousses	do	1	1	
Plaines Wilhems	January - December, 1924.	54	47	Not present March, April, May.
Port Louis	February - December, 1924.	101	92	
Mexico:				
Tampico	Apr. 6, 1925			Plague rat found in vicinity of Government wharves.
Morocco.				
Marrakech				Feb. 9, 1925 Present in native quarter of town. Stated to be pneumonic in form and of high mortality.
Nigeria				August-November, 1924: Cases, 387, deaths, 317.
Palestine:				
Jerusalem	Mar. 3-9	1		
Peru:				
Callao	February, 1925	6	6	
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan. 25-Mar. 21	7	6	
Siberia:				
Transbaikalia—				
Turga	October, 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Do	Jan. 4-Apr. 4	27	8	
Syria.				
Beirut	Jan. 11-Apr. 10	2		
Turkey.				
Constantinople	Jan. 9-15	5	5	
Union of South Africa	Nov. 22-Jan. 3	28	15	In Cape Province, Orange Free State, and Transvaal.
Do	Jan. 4-Apr. 4	55	23	Do.
On vessels:				
S. S. Conde				At Marseille, France, Nov. 8, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 31, 1924: Cases, 409. Jan. 1-20, 1925. Cases, 107.
Algiers	Jan. 1-Mar. 31	10		
Arabia:				
Aden	Jan. 25-Apr. 18	14	1	
Argentina:				
Buenos Aires	Mar. 15-21	1		
Belgium	Jan. 1-Feb. 10	4		
Bolivia				
La Paz	Nov. 1-Dec. 21	20	11	
Do	Jan. 1-Mar. 31		12	
Brazil:				
Pernambuco	Nov. 9-Jan. 3	100	27	
Do	Jan. 4-Mar. 28	111	56	
British East Africa:				
Kenya—				
Mombasa	Jan. 18-Feb. 28	66	14	
Do	Mar. 8-28	29	7	
Uganda—				
Entebbe	Oct. 1-31	4		
Tanganyika Territory	Feb. 15-21	1		
British South Africa:				
Northern Rhodesia	Oct. 26-Dec. 15	57	2	
Do	Jan. 27-Feb. 2	3		Natives.
Southern Rhodesia	Jan. 20-Mar. 25	4	1	
Bulgaria:				
Sofia	Mar. 12-18	1		Varioloid.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 29, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Canada:				
Alberta—				
Calgary	Mar. 15–21	1		
British Columbia—				
Ocean Falls	Mar. 7–27	6		Very mild.
Vancouver	Dec 14–Jan. 3	32		
Do	Jan. 4–Apr. 12	305		
Do	Apr. 19–May 3	11		
Victoria	Jan. 18–Apr. 25	11		
Manitoba—				
Winnipeg	Dec. 7–Jan. 3	14		
Do	Jan. 4–Feb. 27	30		
Do	Apr. 5–11	1		
New Brunswick—				
Northumberland	Feb. 8–14	1		County.
Ontario				Nov 30–Dec 27, 1924 Cases, 33. Dec 28, 1924, to Apr. 25, 1925: Cases, 69, deaths, 1.
Hamilton	Jan. 24–30	1		
Kingston	Apr. 12–18	1		
Ottawa	Mar. 29–Apr. 4	1		
Do	May 3–9	2		
Welland	Mar. 22–Apr. 25	7		
Ceylon				July 27–Nov. 29, 1924; Cases, 27; deaths, 1.
Colombo	Jan. 18–Feb. 7	4		
Do	Mar. 8–Apr. 11	16		
China.				
Amoy	Nov. 9–Feb. 21			Present.
Do	Feb 22–Mar. 28		11	
Antung	Nov. 17–Dec. 28	5		
Do	Jan 5–Feb. 14	15	1	
Do	Mar. 2–Apr 5	9	1	
Canton	Mar. 15–Apr 11			Prevalent.
Chefoo	Mar 15–21			Prevalent. No foreign cases.
Chungking	Mar. 22–Apr. 18			Stated to be widely prevalent; less than in period in year 1924.
Foochow	Nov. 2–Mar. 28			Present.
Hongkong	Nov. 9–Jan 3	6	2	
Do	Jan. 4–Feb 7	9	7	
Do	Feb. 15–Apr. 4	27	13	
Manchuria—				
Dairen	Jan 19–Mar. 15	4		
Harbin	Jan. 15–Feb. 11	5		
Nanking	Jan. 4–Mar. 28			Do.
Shanghai	Dec 7–27	1	2	
Do	Jan. 18–Mar. 7		8	
Do	Apr. 12–25	2	1	
Chosen.				
Seoul	Dec. 1–31	1		
Do	Mar. 1–31	2		
Colombia:				
Buenaventura	Feb. 15–Apr. 4	3		
Santa Marta	Mar. 15–28			Present in mild form in localities in vicinity
Cuba:				
Santiago	Apr. 12–18	3	1	
Czechoslovakia				Apr.–June, 1924: Cases, 1; occurring in Province of Moravia.
Dominican Republic:				
Puerta Plata	Mar. 8–21	3		
Dutch Guiana:				
Paramaribo	Apr. 20	1		
Ecuador:				
Guayaquil	Nov. 16–Dec. 15	4		
Egypt:				
Alexandria	Nov. 12–Dec. 31	10		
Do	Jan. 8–28	8		
Do	Feb. 26–Mar. 4	1		
Cairo	Jan. 29–Feb. 4	1	1	
Esthonia				Dec. 1–31, 1924: Cases, 2.
France				July–December, 1924: Cases, 81.
Do	January, 1925	10		
Dunkirk	Mar. 2–8	1		From vessel. In quarantine.
St. Malo	Feb. 2–8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis
Germany				June 29–Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1–10	1		
Gibraltar	Dec. 8–14	1		
Gold Coast				July–December, 1924: Cases, 106; deaths, 1.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 29, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Great Britain:				
England and Wales	Nov. 23-Jan. 3	472		
Do	Jan. 4-Apr. 18	2,047		
Newcastle-on-Tyne	Jan. 18-Feb. 21	9		
Do	Mar. 1-May 2	2		
Greece				January-June, 1924: Cases, 170; deaths, 27.
Do				July-December, 1924: Cases, 38; deaths, 26.
Saloniki	Nov. 11-Dec. 22	3		
Do	Feb. 17-Mar. 2	4		
Haiti.				
Cape Haitien	Mar. 22-Apr. 2	6		
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 12,564; deaths, 2,857. Jan 4-Mar. 28, 1925: Cases, 54,626; deaths, 12,494.
Bombay	Nov. 2-Jan. 3	30	18	
Do	Jan. 4-Apr. 4	601	307	
Calcutta	Oct. 26-Jan. 3	307	170	
Do	Jan. 4-Mar. 21	2,669	1,875	
Do	Mar. 29-Apr. 4	392	260	
Karachi	Nov. 16-Jan. 3	16	2	
Do	Jan. 4-Feb. 14	52	6	
Do	Feb. 22-Apr. 18	85	23	
Madras	Nov. 16-Jan 3	122	48	
Do	Jan. 4-Mar. 7	552	212	
Do	Mar. 15-Apr. 18	489	197	
Rangoon	Oct. 26-Jan. 3	86	28	
Do	Jan. 4-Feb. 7	287	49	
Do	Feb. 15-Apr. 11	1,121	225	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 223, deaths, 76. Dec. 1-31, 1924; Cases, 485, deaths, 114.
Province—				
Anam	Aug. 1-Sept. 30	49	11	
Do	Dec. 1-31	167	26	
Cambodia	Aug. 1-Sept. 30	40	9	
Do	Dec. 1-31	30	13	
Cochin-China				Aug. 1-Sept. 30, 1924: Cases, 115; deaths, 49. Dec. 1-31, 1924: Cases, 50; deaths, 13
Saigon	Nov. 16-Jan. 3	17	5	Including 100 square kilometers of surrounding country.
Do	Jan. 4-Feb. 21	32	8	
Do	Mar. 1-28	39	6	Do.
Tonkin	Aug. 1-Sept. 30	19	7	
Do	Dec. 1-31	238	62	
Iraq	June 29-Jan. 10	138	67	
Do	Jan. 11-20	4	2	
Bagdad	Nov. 9-Dec. 27	2	1	
Do	Mar. 1-28	2		
Italy				June 29-Dec. 27, 1924: Cases, 63.
Jamaica				Nov. 30, 1924-Jan. 3, 1925: Cases, 50. Reported as alastrim.
Do				Jan. 4-Apr. 25, 1925. Cases, 275. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Nagasaki	Feb. 9-Apr. 26	31	9	
Taiwan	Jan. 1-31	1		
Java:				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in 2 native villages.
Soerabaya	Oct. 19-Dec. 31	685	212	
Do	Jan. 15-Mar. 25	559	78	
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov. 14	2		
Do	Dec. 29-Jan. 2	19	4	
Buitenzorg	Dec. 25-31	1		Batavia Residency.
Cheribon	Oct. 14-Nov. 24	15		
Do	Jan. 1-28	3		
Krawang	Jan. 15-21	1		
Pekalongan	Oct. 14-Nov. 24	22		
Do	Dec 25-31	3		Province.
Pemalang	Jan. 8-14	1		Pekalongan Residency.
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 5. Jan. 1-Feb. 28, 1925: Cases, 6.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 29, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Lithuania				Jan. 1-31, 1925: Cases, 2.
Malta				Apr. 1-15, 1925: Cases, 3.
Mexico.				
Chiapas (State)	Mar. 1			Reported severely prevalent.
Durango	Dec. 1-31		5	
Do	Jan. 1-Apr. 30		29	
Guadalajara	Dec. 23-29		1	
Do	Jan. 6-Mar. 23		4	
Do	Apr. 21-May 11		11	
Mexico City	Nov. 23-Dec. 27	5		
Do	Jan. 11-Apr. 25	62		
Monterey				Jan. 24, 1925: Outbreak. Mar. 14, 1925, present.
Oaxaca (State)	Mar. 1			Reported severely prevalent.
Salina Cruz	Dec 1-31	1	1	
Do	Feb. 22-Mar. 31	7	1	
Saltillo	Feb 22-Apr. 11		2	
San Luis Potosi	Mar. 29-May 9		4	
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-Apr. 30	66	20	
Torreon	Apr. 1-30	1	1	
Tuxpam district	Apr. 17-May 7	20	3	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan. 5-Apr. 19		39	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Yucatan (State)	Apr. 5-11			In country towns.
Nigeria				January-June, 1924: Cases, 357; deaths, 87
Do				July-November, 1924: Cases, 87; deaths, 25.
Paraguay:				
Asuncion	Jan. 4-10		1	
Persia:				
Teheran	Sept. 23-Dec 31		12	
Do	Jan. 1-Feb. 18		10	
Peru:				
Arequipa	Nov. 24-30		1	
Do	Jan. 1-Feb. 28		4	
Philippine Islands:				
Manila	Mar. 29-Apr. 4	3		
Poland				Sept. 21-Dec. 28, 1924: Cases, 30; deaths, 2. Jan. 4-Feb. 14, 1925: Cases, 15; deaths, 1.
Portugal:				
Lisbon	Dec 7-Jan. 3	17		
Do	Jan. 4-Apr. 25	140		Jan. 4-Apr. 18, 1925: Deaths, 35.
Oporto	Nov. 30-Dec. 27	3	2	
Do	Jan. 11-Mar. 14	3		
Do	Apr 12-25	2		
Russia				January-June, 1924: Cases, 18,229. July-November, 1924: Cases, 3,665.
Senegal:				
Dakar	Mar. 16-22	4		
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan. 18-Feb. 21		19	
Do	Mar. 1-21	11	4	
Sierra Leone:				
Freetown	Feb. 7-Mar. 15	3		
Kaiyima	Mar. 9-15	1		
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Do	Mar. 19-25		1	
Cadiz	Nov. 1-Dec. 31		51	
Do	Jan. 1-Feb. 28		10	
Madrid	Year 1924		40	
Do	January-February		13	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-May 2		96	
Valencia	Nov. 30-Dec. 6	2		
Do	Feb. 15-May 2	6		
Straits Settlements:				
Singapore	Feb. 22-Apr. 4	4	1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 29, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Switzerland:				
Berne	Mar. 15-Apr. 11	4		
Lucerne	Nov 1-Dec. 31	19		
Do	Jan. 1-31	24		
Syria:				
Aleppo	Nov. 23-Dec. 27	13		
Do	Jan. 4-Feb 28	71	18	
Beirut	Feb. 11-20	1		
Do.	Apr. 1-10	1		
Damascus	Jan 6-13	2		
Do	Feb 11-20	22		
Tripoli:				
Tripoli	July 14-Jan. 2	53		
Tunis:				
Tunis	Nov. 25-Dec. 20	42	35	
Do	Jan 1-Apr. 22		325	
Do	Apr. 30-May 6		13	
Turkey:				
Constantinople	Dec. 13-19	5		
Do	Mar. 16-Apr. 15	5	1	
Union of South Africa				Nov. 1-Dec. 31, 1924 Cases, 14. Jan 1-31, 1925. Cases, 4—natives
Cape Province	Feb. 1-21			Outbreaks
De Aar District	Jan. 25-31			Outbreak at railway camp.
Do	Nov. 9-Jan. 17			Outbreaks.
Natal	Mar. 1-7			Do.
Orange Free State	Nov 2-8			Do.
Ladybrand District	Jan. 15-31			Outbreak on farm.
Transvaal	Nov. 9-Jan. 10			Do.
Do	Feb 1-21			Outbreaks
Uruguay				January-June, 1924. Cases, 101; deaths, 2.
Do				July-November, 1924: Cases, 53; deaths, 2.
Yugoslavia	Year 1924	330	64	
Do	Jan 1-Feb. 28	6	1	
Belgrade	Mar 1-Apr 7	6		
On vessel				
S. S. Eldridge	Mar. 23	1		At Port Townsend, from Yokohama and ports.
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St Malo, France, January, 1924, from Sfax, Tunis; believed to have imported smallpox infection.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 101; deaths, 14.
Algiers	Nov. 1-Dec. 31	5	1	
Do	Jan. 1-Apr. 20	14	7	In villages, department of Algiers: Cases, natives, 24; Europeans, 3.
Argentina:				
Rosario	Jan. 1-31		1	
Bolivia:				
La Paz	Nov. 1-Dec. 31	3		
Do	Jan. 1-31	2		
Do	Mar. 1-31	1		
Bulgaria				January-June, 1924: Cases, 191; deaths, 28.
Do				July-October, 1924: Cases, 5.
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Do	Jan. 6-12		2	
Do	Jan. 27-Feb. 2		1	
Iquique	Nov. 25-Dec 1		2	
Do	Feb. 1-Mar. 28		2	
Talcahuano	Nov. 16-Dec. 20		5	
Do	Jan. 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-Mar. 28		17	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 29, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
China:				
Antung	Mar. 16-22	1		
Chosen:				
Chemulpo	Feb 1-28	1		
Seoul	Nov. 1-30	1	1	
Do	Feb. 1-Mar. 31	6	2	
Czechoslovakia				December, 1924: Cases, 5.
Do	Jan. 1-31	14		
Egypt				
Alexandria	Dec. 3-9	1	1	
Do	Mar. 12-18	1		
Cairo	Oct. 1-Dec. 23	13	8	
Do	Jan. 22-28	1		
Esthonia				Dec. 1-31, 1924: Cases, 5.
Do	Jan. 1-31	4		
France				July-October, 1924: Cases, 7.
Gold Coast				Oct. 1-31, 1924. 1 case.
Greece				May-June, 1924. Cases, 116; deaths, 8.
Do				July-December, 1924: Cases, 40; deaths, 4.
Athens	Feb. 1-Apr. 10		10	
Saloniki	Nov. 17-Dec. 15	3	2	
Do	Jan 25-31	1		
Japan				Aug. 1-Nov. 15, 1924 Cases, 2.
Latvia				October-December, 1924. Cases, 30 Feb. 1-28, 1925; Cases, 11.
Lithuania				August-October, 1924: Cases, 16; deaths, 1.
Do				Jan. 1-31, 1925. Cases, 27; deaths, 2.
Mexico				
Durango	Dec 1-31		1	
Do	Mar 15-Apr 30	1	2	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov 9-Jan 3	80		Including municipalities in Federal District.
Do	Jan 11-Apr. 25	96		
San Luis Potosi	Mar 8 14		1	
Do	Apr. 26-May 2		1	
Morocco				November, 1924: Cases, 5.
Palestine				Nov. 12-Dec. 29, 1924: Cases, 10.
Ekron	Dec 23-29	1		
Jerusalem	do	2		
Do	Jan 20-26	1		
Mikveh Israel	do	1		
Petach-Tikvah	Mar 24-30	1		
Ramleh	Feb. 10-Mar 23	2		
Tiberias	Feb. 24-Mar. 2	2		
Peru:				
Arequipa	Nov. 24-Dec. 31		3	
Do	Mar 1-31		1	
Poland				Sept. 28, 1924-Jan. 3, 1925: Cases, 751, deaths, 57. Jan. 4-Feb. 11, 1925. Cases, 827; deaths, 68.
Portugal.				
Lisbon	Dec. 29-Jan. 4		2	
Do	Apr. 6-12		1	
Oporto	Jan. 4-Feb. 7	2		
Rumania				January-June, 1924: Cases, 2,906; deaths, 328
Do				July-December 1924: Cases, 288; deaths, 38.
Constanza	Dec. 1-20	1		
Do	Feb. 1-28	2		
Russia				Jan. 1-June 30, 1924: Cases, 95,682. July-November, 1924: Cases, 34,729.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Sweden:				
Goteborg	Jan. 18-Feb. 28	2		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Tunis	Mar. 5-25	9	1	
Do	Apr. 2-May 6	25	5	
Turkey:				
Constantinople	Nov. 15-Dec. 19	6	1	
Do	Jan. 2-Mar. 7	9	1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to May 29, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa				Nov. 1-Dec 31, 1924: Cases, 345; deaths, 87. Jan. 1-Feb. 28, 1925 Cases, 159; deaths, 17; native. In white population cases, 12.
Cape Province	Nov. 1-Dec. 31	126	24	
Do	Jan. 1-Mar. 15	74	9	
Do	Mar 22-Apr. 4			Outbreaks.
East London	Nov 16-22	1		
Do	Jan 18-Apr 4	3	2	
Port Elizabeth	Feb. 22-Mar 7	1	1	
Natal	Nov. 1-Dec 31	130	50	
Do	Jan 1-Feb. 28	43	5	
Do	Mar. 1-Apr 4			Do.
Durban	Feb. 15-Mar. 28	4		
Orange Free State	Nov 1-Dec 31	59	8	
Do	Jan. 1-Feb. 28	32	3	Native.
Transvaal	Nov. 1-Dec. 31	30	5	
Do	Jan. 1-Feb. 28	10		Do.
Yugoslavia				Year 1924 Cases, 319; deaths, 22 Jan 1-Feb. 28, 1925: Cases, 87; deaths, 8.
Belgrade	Nov. 24-Dec 28	5		
Do	Apr. 8-14	2		

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Gold Coast	October-November, 1924.	4	4	
Salvador:				
San Salvador	June-October, 1924.	77	28	Last case, Oct 22, 1924.

CONTENTS

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A METHOD FOR THE EXAMINATION OF NEOARSPHENAMINE AND SULFARSPHENAMINE

By ELIAS ELVOVE, Chemist, Hygienic Laboratory, United States Public Health Service

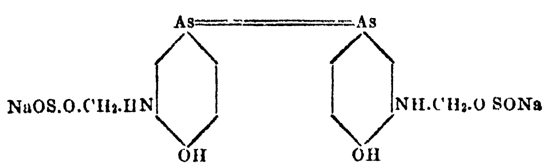
In continuing the previously reported work [1] on the development of simplified methods for determining the distribution of the sulfur in neoarsphenamine, it became apparent that it would be necessary to have some suitable method for differentiating between neoarsphenamine and sulfarsphenamine.[2] While carrying out some experiments with this object in view, it was found that although iodine in alkaline solution readily oxidizes nearly all of the sulfur of neoarsphenamine to sulfate, it apparently does not act the same way on the organically combined sulfur of sulfarsphenamine.

PROCEDURE

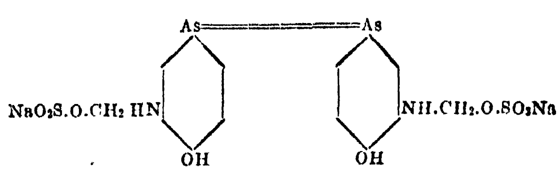
The procedure used in these experiments was as follows: 0.1 gram of the sample of neoarsphenamine or sulfarsphenamine was dissolved in 50 c. c. H_2O, placed in a 200 c. c. flask, and mixed with 50 c. c. 0.1 N iodine. This solution was then mixed with 10 c. c. 2N sodium hydroxide and allowed to stand at room-temperature for five minutes. At the end of that time, the solution was mixed with

[1] Jour. Ind. Eng. Chem., 14, 624 (1922); Pub. Health Repts., 39, 750-754 (1924).

[2] The following formulae are supposed to represent the chemical constitution of neoarsphenamine and sulfarsphenamine, respectively, if we assume that both amino groups of the arsphenamine base participate in the reactions.



NEOARSPHENAMINE



SULFARSPHENAMINE

21 c. c. N hydrochloric acid and made up to the 200 c. c. mark with distilled water. There were then withdrawn 50 c. c. of the resulting solution and the free iodine was titrated with 0.1 N sodium thiosulfate, using starch as indicator. The remaining 150 c. c. were mixed with 20 or 30 c. c. of approximately 0.05 M sodium arsenite.[3] When the change in color indicated the completion of the reaction between the free iodine and the arsenite, the solution was transferred quantitatively into a 400 c. c. beaker. After adding 5 c. c. N hydrochloric acid to the solution, it was heated to boiling, treated with 5 c. c. of 10 per cent $BaCl_2$, and the total sulfate was determined as $BaSO_4$.

The results obtained with neoarsphenamine are given in Table 1.

TABLE 1.—*Comparison of results for total sulfur and sulfur as sulfate after oxidation by iodine in alkaline solution, in the case of neoarsphenamine*

Manufacturer	Total sulfur[1]	Sulfur as sulfate after oxidation by iodine in alkaline solution	Difference
	Per cent	*Per cent*	*Per cent*
"A"	8.38	8.45	+0.07
"B"	10.32	9.85	−0.47
"C"	10.55	10.69	+0.14
"D"	6.71	6.44	−0.27

[1] These determinations were carried out by Mr. C. G. Remsburg in connection with the routine work of the Hygienic Laboratory, using the methods previously reported (see reference 1).

The results obtained with sulfarsphenamine are given in Table 2.

TABLE 2.—*Comparison of results for total sulfur and sulfur as sulfate after oxidation by iodine in alkaline solution, in the case of sulfarsphenamine*

Manufacturer	Total sulfur	Sulfur as sulfate after oxidation by iodine in alkaline solution	Difference
	Per cent	*Per cent*	*Per cent*
"A"	10.75	4.33	6.42
"B"	12.08	3.86	8.22
"C"	11.38	5.70	5.68
"D"	11.36	4.52	6.84
"E"	12.42	4.25	8.17

The results given in Tables 1 and 2 show that although iodine in alkaline solution oxidized nearly all of the oxidizable sulfur of the neoarsphenamine, so that the results were quite close to those for total sulfur, the corresponding results in the case of the sulfarsphenamine were in most cases less than half of the total sulfur and in one case ("B") even less than one-third of the total sulfur.

[3] The smaller quantity of arsenite was used mostly with neoarsphenamine and the larger when working with sulfarsphenamine.

The probable explanation of this difference in behavior of neoarsphenamine and sulfarsphenamine when oxidized by iodine in alkaline solution is that it is paralleling the similar difference in behavior of sodium formaldehyde sulfoxylate and sodium formaldehyde[4] bisulfite when these are subjected to oxidation by iodine without the addition of alkali. Thus, according to Baumann, Thesmar and Frossard,[5] although iodine will oxidize the sulfur of formaldehyde sulfoxylate to sulfate without the previous addition of bicarbonate, for the oxidation by iodine of the sulfur of formaldehyde bisulfite, the previous addition of bicarbonate is necessary.

The low results for sulfur in the case of sulfarsphenamine appear to be due to a rather sharp differentiation by the iodine in alkaline solution between two different classes of sulfur compounds, the organically combined sulfur and that which remains in the mixture as uncombined[6] sodium formaldehyde bisulfite. That they are not due simply to a slow rate of oxidation of the organically combined sulfur is indicated by the results given in Table 3.

TABLE 3.—*Effect of varying the time on the amount of sulfur oxidized to sulfate by iodine in alkaline solution, in the case of sulfarsphenamine*

Manufacturer	Total sulfur	Time the iodine in alkaline solution was allowed to act	Sulfur by iodine method	Sulfur not oxidized to sulfate by iodine in alkaline solution
	Per cent	*Minutes*	*Per cent*	*Per cent*
"A"	10.40	1	4.89	5.[illegible]1
Do	10.40	60	4.62	5.78
"B"	12.17	1	3.57	8.[illegible]0
Do	12.17	60	3.71	8.[illegible]6
"C"	10.97	1	8.74	2.[illegible]3
Do	10.97	60	8.63	2.[illegible]4
"D"	11.61	1	4.31	7.[illegible]0
Do	11.61	60	4.29	7.32

An inspection of Table 3 shows that there was but little difference in the results obtained when the action of the iodine in alkaline solution was allowed to proceed for only one minute and when the time was prolonged to sixty minutes, which would not have been the case if the organically combined sulfur were continuously oxidized to any considerable extent. It is evident, therefore, that the above-described difference in behavior between neoarsphenamine and sulfarsphenamine can be taken advantage of for the purpose of differentiating

[4] These are the substances that are caused to react with the amino groups of the arsphenamine base to yield neoarsphenamine and sulfarsphenamine, respectively.

[5] See Jellinek: Das Hydrosulfit, pt. II, pp. 100-102, vol. 18, Sammlung chemischer und chemisch-technischer Vorträge (1912).

[6] This appears as the most logical conclusion on the basis of the available facts. There is, however, the possibility that an unknown combination is formed which is unstable and behaves like the uncombined formaldehyde bisulfite. It is in this restricted sense, therefore, that the term "uncombined" is used in this paper. And, of course, we must depend on the values obtained in the iodine titrations to differentiate between the uncombined formaldehyde bisulfite and neoarsphenamine.

between these two substances. And in conjunction with other determinations, such as the determination of the arsenic, total sulfur, amount of sulfate before treatment with iodine, amount of iodine required on direct titration, and amount of iodine required in the presence of alkali, together with the deductions which may be made on the basis of these determinations, it might be possible to evaluate, at least approximately, the composition of mixtures of neoarsphenamine and sulfarsphenamine. The experiments which were carried out with this object in view indicated that this plan is quite feasible.

Before proceeding, however, with this part of the work it may be well to consider the effect of the above-mentioned difference in behavior of iodine in alkaline solution toward the organically combined sulfur of neoarsphenamine and sulfarsphenamine in its relation to the Macallum [7] procedure for examining neoarsphenamine.

In the Macallum procedure it is apparently assumed that there is no difference in behavior toward iodine in alkaline solution between the organically combined methylene bisulfite and that which remains in the mixture as uncombined sodium formaldehyde bisulfite. A close study of the Macallum procedure reveals further that it is apparently assumed that there is no difference in behavior toward iodine in acid solution between the organically combined methylene sulfoxylate and that which remains in the mixture as uncombined sodium formaldehyde sulfoxylate, so that from the figures obtained on titration with iodine in acid solution the total sulfoxylate is calculated; and by adding to these figures 50 per cent, it is assumed that this sum gives the iodine equivalent of the sulfoxylate in alkaline solution. That there is, however, a difference in behavior toward iodine of the organically combined methylene sulfoxylate and that which remains in the mixture as uncombined sodium formaldehyde sulfoxylate has been pointed out by Raiziss and Falkov [8] who conclude that the sulfoxylate which is combined to the amino group of the arsphenamine base is not oxidized by iodine alone. And if the iodine in acid solution reacts only with the inorganic sulfoxylate but not to any considerable extent with the organically combined sulfoxylate, we can readily understand some of the results which Macallum reports. Thus Macallum found by his procedure that a sample of neoarsphenamine which he examined contained 29.12 per cent of methylene bisulfite and only 4.09 per cent of sulfoxylate. This unexpectedly very low result for methylene sulfoxylate and comparatively very high result for methylene bisulfite may be explained as being due to the assumption that the titration with iodine in acid solution is a measure of the total sulfoxylate, including that which is organically combined. If, however, the iodine in acid solution reacts

[7] Jour. Am. Chem Soc. 44, 2578–2582 (1922).
[8] Jour. Biol. Chem. 46, 209 (1921)

only with the inorganic sulfoxylate but not to any considerable extent with the organically combined sulfoxylate, the figure 4.09 per cent would represent only the sulfoxylate which remained in the mixture as uncombined sodium formaldehyde sulfoxylate; and since the iodine requirement of the methylene bisulfite by the Macallum procedure is obtained by subtracting from the total iodine requirement a figure which includes the iodine requirement of the total sulfoxylate, it follows that by neglecting to subtract the iodine requirement of the organically combined sulfoxylate, we thereby assign to the methylene bisulfite not only the iodine which it itself requires, but also that which was really consumed by the organically combined sulfoxylate, thus making it possible for the results to indicate a much higher methylene bisulfite content than the sample really contains.

In Macallum's paper to which reference has been made there are reported the results obtained with only one sample of neoarsphenamine. It seemed desirable to compare the results obtained by this procedure with several samples of neoarsphenamine and sulfarsphenamine from various manufacturers. The results which were obtained by Macallum's procedure with samples of neoarsphenamine are given in Table 4.

TABLE 4.—*Results by Macallum's procedure with samples of neoarsphenamine*

Manufacturer	Lot No.	Percentage As	0.1 N iodine required by 0.2 g. on direct titration [1]	0.1 N iodine required by 0.2 g. in acid solution by Macallum's procedure	Difference between the total 0.1 N iodine required by 1 g. and the 0.1 N iodine equivalent of the arsphenamine portion in acid solution [2]	Percentage of sulfoxylate by Macallum's procedure [3]	0.1 N iodine required by 0.1 g. in alkaline solution by Macallum's procedure	Difference between the total 0.1 N iodine required by 1 g. and the 0.1 N iodine equivalent of the arsphenamine portion [4] +sulfoxylate [5] in alkaline solution	Percentage of methylene bisulfite by Macallum's procedure [6]
			c. c.	c. c.	c. c.		c. c.	c. c.	
"A"	1	20.33	29.30	27.90	34.40	8.68	31.65	61.20	17.95
"	2	19.86	----------	29.10	42.80	10.81	32.75	64.30	18.85
"	3	20.24	30.50	31.12	50.92	12.85	34.05	61.32	18.00
"	4	20.52	29.96	30.60	46.87	11.83	34.10	65.09	19.09
"B"	1	18.28	28.30	26.90	39.96	10.09	30.10	57.89	16.98
"	2	18.93	33.70	33.35	68.84	17.38	35.30	60.07	17.61
"	3	19.58	34.76	35.75	77.48	19.55	36.00	47.59	13.96
"C"	1	19.40	34.10	32.40	61.66	15.57	35.45	67.60	19.82
"D"	1	19.11	21.50	23.55	18.92	4.77	27.40	54.14	15.88

[1] In order to conserve the material, this titration was carried out on 0.1 g only, but in the tables the results are reported on the basis of 0.2 g in order to make the figures directly comparable with those obtained in the titration in acid solution by Macallum's procedure. The sample of the neoarsphenamine or sulfarsphenamine was dissolved in 5 c. c. H_2O, mixed with 20 c. c. 0.1 N iodine and the excess iodine was titrated with 0.1 N $Na_2S_2O_3$ using starch as indicator.

[2] Using Macallum's procedure and his factor for calculating the c. c. of 0.1 N iodine equivalent of the arsphenamine portion, namely, percentage of arsenic multiplied by 5.172 (775.5/149.92).

[3] The c. c. of 0.1 N iodine equivalent of the sulfoxylate (CH_2OSONa) divided by 3.96 (400/101). Thus, for example, the first value of 8.68 is obtained by dividing 34.40 by 3.96.

[4] The percentage of arsenic multiplied by 10.02 (1502/149.9).

[5] Which is 1.5 times that in acid sol

[6] The c. c. of 0.1 N iodine equivalent of the methylene bisulfite (CH_2OSO_2Na) divided by 3.41 (400/117). Thus, for example, the first value of 17.95 is obtained by dividing 61.20 by 3.41.

The results obtained by Macallum's procedure with samples of sulfarsphenamine are given in Table 5.

TABLE 5.—*Results by Macallum's procedure with samples of sulfarsphenamine*

Manufacturer	Percentage of As	0.1 N iodine required by 0.2 g. on direct titration[1]	0.1 N iodine required by 0.2 g. in acid solution by Macallum's procedure	Difference between the total 0.1 N iodine required by 1 g. and the 0.1 N iodine equivalent of the arsphenamine portion in acid solution[2]	Percentage of sulfoxylate by Macallum's procedure[3]	0.1 N iodine required by 0.1 g. in alkaline solution by Macallum's procedure	Difference between the total 0.1 N iodine required and the 0.1 N iodine equivalent of the arsphenamine portion[4] + sulfoxylate[5] in alkaline solution	Percentage of methylene bisulfite by Macallum's procedure[6]	Percentage of methylene bisulfite on basis of found content of oxidizable sulfur minus the sulfur equivalent of the sulfoxylate	Percentage of total sulfur	Percentage of sulfur as sulfate	Percentage of total oxidizable sulfur
		c. c.	c. c.	c. c.		c. c.	c. c.					
"A"	21.03	21.90	24.95	15.98	4.04	25.20	17.31	5.08	39.23	12.48	0.47	12.01
"B"	19.21	20.86	24.40	22.65	5.72	24.30	16.55	4.85	36.08	12.05	0.37	11.68
"C"	20.20	21.66	22.45	7.78	1.96	23.10	16.93	4.96	36.08	10.76	0.27	10.49
"D"	22.49	23.70	26.15	14.43	3.64	28.40	37.01	10.85	32.17	10.25	0.30	9.95
"E"	18.93	19.98	21.50	9.60	2.42	25.20	47.92	14.05	40.29	12.42	0.63	11.79

[1,2,3,4,5,6] See corresponding footnotes of Table 4.

It is seen from the results given in Table 4 that by the Macallum procedure most of the samples of neoarsphenamine examined showed an unexpectedly greater percentage of methylene bisulfite than sulfoxylate. Similarly, the results given in Table 5 show an unexpectedly very low methylene bisulfite content in samples of sulfarsphenamine. Thus, for example, on the basis of the found content of oxidizable sulfur minus the sulfur equivalent of the sulfoxylate, the sulfarsphenamine from manufacturer "B" should[9] contain 36.08 per cent methylene bisulfite (CH_2OSO_2Na) against only 4.85 per cent found by the Macallum procedure. Likewise, the sample from manufacturer "C" should contain 36.08 per cent methylene bisulfite on the basis of the found content of oxidizable sulfur minus the sulfur equivalent of the sulfoxylate, whereas the Macallum procedure showed the presence of only 4.96 per cent.

The plan of analysis on the basis of which it appears possible to evaluate, at least approximately, the composition of commercial samples of neoarsphenamine and sulfarsphenamine, to which reference was made above, was carried out as follows: In addition to the arsenic determination, the total sulfur and sulfate were determined by the methods previously reported.[10] By means of the procedure described at the beginning of this paper, the total sulfur oxidizable to sulfate by

[9] As shown in Table 5, the total oxidizable sulfur in this case was 11.68 per cent; the percentage of sulfoxylate (CH_2OSONa) by the Macallum procedure was 5.72, which is equivalent to 1.81 per cent (5.72×0.3168) sulfur; $11.68 - 1.81 = 9.87$; $9.87 \times 3.656 = 36.08$.

[10] See reference 1.

iodine in alkaline solution was determined and also the total amount of iodine required under these conditions was ascertained. The amount of iodine required on direct titration was determined by dissolving 0.1 g. of the sample in 5 c. c. H_2O, mixing with 20 c. c. 0.1 N iodine and titrating the excess iodine with 0.1 N sodium thiosulfate. By subtracting the iodine equivalent[11] of the arsphenamine portion under these conditions, the difference was taken as representing approximately the iodine equivalent of the uncombined formaldehyde sulfoxylate. In the case of sulfarsphenamine, the sulfur oxidized to sulfate by iodine in alkaline solution was taken as an approximate measure of the uncombined sodium formaldehyde bisulfite. By subtracting the uncombined formaldehyde sulfoxylate in the case of neoarsphenamine or the uncombined formaldehyde bisulfite in the case of sulfarsphenamine from the total, as calculated on the basis of the total sulfur and sulfate determinations, the corresponding combined portion was ascertained. If this was more than required to combine with one of the amino groups of the arsphenamine as calculated on the basis of the arsenic determination, the excess was assumed to be present as the di-substitution product. Since in the case of most of the samples of neoarsphenamine examined the results for total sulfur and the corresponding figures obtained by the iodine method described at the beginning of this paper were quite close, being in some instances quite within the possible experimental error, it seemed reasonable to assume, tentatively at least, that where there is a considerable difference between the result for total sulfur and the corresponding figure obtained by the iodine method, this difference probably represents a sulfarsphenamine-like impurity the sulfur of which is not oxidized to sulfate by the iodine method. The results obtained with some commercial samples of neoarsphenamine are given in Table 6.

[11] The same factors as used by Macallum were employed in these calculations. The c. c. of 0.1 N iodine equivalent of the arsphenamine portion in one gram of the sample, under these conditions, was calculated by multiplying the percentage of arsenic by 5.172 (775.5/149.92).

TABLE 6.—*Results with commercial samples of neoarsphenamine*

Manufacturer	Lot No.	Percentage of As	Indicated percentage of total arsenical on basis of As determination [1]	Percentage of total sulfur	Percentage of sulfur by iodine method	Indicated percentage of sulfarsphenamine-like impurity [2]	Percentage of sulfur as sulfate	Indicated percentage of sulfur as uncombined formaldehyde sulfoxylate [3]	Indicated percentage of the mono-substitution product [4]	Indicated percentage of the di-substitution product	Calculated 0.1 N iodine equivalent of the oxidizable sulfur in 0.1 g on basis of the gravimetric determinations [5]	0.1 N iodine actually found to be required by 0.1 g. in excess of the equivalent of the arsphenamine portion	Approximate measure in terms of 0.1 N iodine of possibly nonsulfur reducing substances in 0.1 g [6]	Approximate measure in terms of 0.1 N iodine of oxygenated impurities in 0.1 g.
											c. c.	c. c.	c. c.	c. c.
"A"	1	20.33	76.71	7.92	8.08	0	1.01	3.31	86.64	0	13.25	13.03	-----	-----
Do	2	19.58	73.88	8.38	8.45	0	1.13	2.50	84.69	15.31	13.72	14.58	-----	-----
Do	3	20.24	76.37	9.27	8.78	2.71	0.89	3.82	97.60	0	14.80	15.82	-----	-----
Do	4	20.52	77.42	8.84	8.70	0	0.80	3.50	98.40	0	14.64	14.84	-----	-----
"B"	1	19.40	73.20	10.32	9.85	2.52	1.37	3.87	84.75	15.25	15.90	15.36	-----	-----
Do	2	19.68	74.25	11.75	11.50	0.46	1.20	5.34	81.06	18.94	19.31	17.78	-----	0.53
Do	3	18.93	71.42	10.54	10.07	2.52	1.13	5.65	84.14	0	16.76	18.03	-----	-----
"C"	1	19.58	73.88	11.05	10.84	0	1.15	5.80	93.06	0	18.17	18.98	-----	-----
Do	2	19.40	73.20	10.12	9.21	6.63	2.03	5.62	41.16	0	13.46	17.44	2.98	-----
Do	3	19.86	74.93	10.55	10.69	0	1.99	4.97	87.97	0	16.31	17.30	-----	-----
"D"	1	20.24	76.37	6.71	6.44	0.64	0.63	4.34	34.35	0	10.90	15.02	3.12	-----

[1] All calculations were based on the formulæ for neoarsphenamine and sulfarsphenamine, respectively, given in the footnote at the beginning of this paper. Since the figures are intended to give only approximate comparisons, no allowance or correction was made on the basis of the actual composition of each sample as indicated by the results of the analyses. Assuming, therefore, a molecular weight of 566 for neoarsphenamine, the factor for converting percentage of arsenic to percentage of neoarsphenamine would be 3.773 (566÷150), which was the factor used.

[2] In making these calculations, a difference between the total sulfur and sulfur by the iodine method of about 0.2 per cent was assumed as possibly representing the experimental error. Hence, where this difference was greater, 0.2 per cent was first subtracted and only the excess over this quantity was assumed to represent the sulfarsphenamine-like impurity. Thus, for example, in the case of sample No. 3 "A," the calculation may be indicated as follows: 9.27−8.78=0.49, 0.49−0.2=0.29, 0.29×9.344=2.71.

[3] These figures are based on the assumption that the excess iodine over the equivalent of the arsphenamine portion required on direct titration is an approximate measure of the uncombined formaldehyde sulfoxylate, as is indicated by the work of Raiziss and Falkov (reference 8). Thus, for example, 0.1 gram of sample No. 1 "A" required 14.65 c. c. 0.1 N iodine on direct titration. The calculated 0.1 N iodine equivalent of the arsphenamine portion was 10.51 c. c. (20.33×0.5172), leaving 4.14 c. c. as the approximate measure of the uncombined formaldehyde sulfoxylate, which corresponds to 3.31 mg. sulfur (4.14×0.8) in the 0.1 gram sample, or 3.31 per cent. It can not be emphasized too much, however, that all the calculations are based on the assumption that the sample contains no other impurities than those of which account is here taken. The presence of any additional impurity may, of course, affect the results one way or the other but its specific nature would have to be known before we could judge as to just what its effect would be. Thus, for example, if there is reason to suspect the presence of free sulfite or bisulfite, this would have to be taken into consideration in interpreting the results obtained on direct titration with iodine. Similarly, if further work should show that any one of our assumptions is not strictly correct, the results here reported would, of course, need a reinterpretation.

[4] Thus, for example, in the case of sample No. 2 "A," since the percentage of arsenic was 19.58, the theoretical percentage of sulfur for the mono-substitution product would be 4.18 (32÷150=0.2133, 19.58×0.2133=4.18). Subtracting the 1.13 per cent of sulfur originally present as sulfate from the total sulfur by the iodine method (8.45 per cent), we have 7.32 as the percentage of sulfur oxidizable by the iodine. Subtracting from this 2.50, the indicated percentage of sulfur as uncombined formaldehyde sulfoxylate, we have 4.82 for the percentage of sulfur as organically combined sulfoxylate, i. e., 0.64 per cent in excess of that required for the mono-substitution product. This would permit of 15.31 per cent of the arsenical to be present as the di-substitution product. Substracting this figure from 100, we have 84.69 as the indicated percentage of the mono-substitution product. Where the results indicated that the sample in question contained some sulfarsphenamine-like impurity, the corresponding amount of arsenic was subtracted in calculating the theoretical percentage of sulfur required for the neoarsphenamine.

[5] Thus, for example, the first figures in these columns were obtained as follows. The total sulfur found by the iodine method was 8.08 per cent of which 1.01 per cent was present originally as sulfate, thus leaving 7.07 per cent of sulfur oxidizable by the iodine. In other words, 0.1 g. of the sample contained 7.07 mg. of sulfur oxidizable by the iodine. When the sulfur of formaldehyde sulfoxylate is oxidized to sulfate by iodine in alkaline solution, the formaldehyde residue is simultaneously oxidized to formate and hence each molecule takes up three atoms of oxygen which are, of course, equivalent to six atoms of the iodine; from which follows that 1 c. c. of 0.1 N iodine is, under these conditions, equivalent to 0.5333 mg. (3.2 ÷ 6) of sulfur. Dividing 7.07 by 0.5333, we obtain 13.25. Now the total 0.1 N iodine actually found to be required in this case was 33.40 c. c. Subtracting 20.37 c. c. (percentage of As, 20.33 × 1.002) as the arsphenamine equivalent, we obtain 13.03 c. c. as the amount of the 0.1 N iodine which was used up in oxidizing the formaldehyde sulfoxylate residue.

[6] A difference of about 1 c. c. of 0.1 N iodine probably is a fair allowance for the accumulated experimental errors. Hence where the difference was greater than 1 c. c. 0.1 N iodine, the latter quantity was subtracted, and only the excess over this quantity was assumed to represent nonsulfur reducing substances, etc.

The results given in Table 6 show that the figures for total sulfur and the corresponding figures by the iodine method were quite close in most of the cases studied, thus indicating that there were but little sulfarsphenamine-like impurities in most of these preparations. These results also indicate that with the exception of only a few samples there was not enough organically combined sulfur to account for a di-substitution product; and that in two of the samples there was not sufficient organically combined sulfur to account for even 50 per cent of the mono-substitution product.

The results obtained with commercial samples of sulfarsphenamine are given in Table 7.

TABLE 7.—*Results with commercial samples of sulfarsphenamine*

Manufacturer	Lot No.	Percentage of As	Indicated percentage of total arsenical on basis of As determination [1]	0.1 N iodine required by 0.1 g. on direct titration	Calculated 0.1 N iodine equivalent of the arsphenamine portion in 0.1 g. on direct titration [2]	Percentage of total sulfur	Percentage of sulfur by iodine method [3]	Percentage of sulfur as sulfate	Indicated percentage of sulfur as uncombined formaldehyde bisulfite [4]	Indicated percentage of the monosubstitution product [5]	Indicated percentage of the di-substitution product	Calculated 0.1 N iodine equivalent of the oxidizable sulfur in 0.1 g. on basis of the gravimetric [6] determinations	0.1 N iodine actually found to be required by 0.1 g., in excess of the arsphenamine equivalent	Approximate measure [7] in terms of 0.1 N iodine of nonsulfur reducing substances or oxidizable sulfur other than that corresponding to sulfite (SO_3) in 0.1 g.
				c. c.	c. c.							c. c.	c. c.	c. c.
"A"	1	20.20	80.54	10.83	10.45	10.76	3.96	0.27	3.69	42.23	57.77	4.61	6.16	0.55
Do	2	19.49	77.71	10.20	10.08	10.75	4.33	0.87	3.46	45.68	54.32	4.32	5.57	0.25
Do	3	19.02	75.83	10.65	9.84	10.40	4.80	0.71	4.18	64.29	35.71	5.22	6.84	0.02
"B"	1	19.58	78.07	10.65	10.13	12.53	3.70	0.46	3.24	0	100	4.05	4.58	-------
Do	2	19.40	77.35	10.25	10.03	12.17	3.57	0.29	3.28	0	100	4.10	4.06	-------
Do	3	19.21	76.59	10.43	9.94	12.05	3.86	0.37	3.49	0	100	4.36	6.65	1.29
Do	4	18.83	75.08	10.45	9.74	12.08	3.86	0.10	3.76	0	100	4.70	5.13	-------
"C"	1	21.08	84.05	11.35	10.90	10.97	8.74	2.33	6.41	49.55	0	8.01	7.58	-------
Do	2	22.30	88.91	11.83	11.53	10.55	8.72	2.21	6.51	38.45	0	8.14	7.36	-------
Do	3	22.58	90.03	12.05	11.68	10.29	9.33	2.85	6.48	19.91	0	8.10	7.03	-------
"D"	1	21.32	85.00	11.25	11.03	11.61	4.31	0.43	3.88	39.56	60.44	4.85	4.58	-------
Do	2	22.77	90.78	11.95	11.78	10.62	5.41	0.34	5.07	92.80	7.20	6.33	6.38	-------
Do	3	21.65	86.32	11.25	11.20	11.38	5.70	0.52	5.18	77.00	23.00	6.48	8.01	0.53
"E"	1	20.90	83.33	10.90	10.81	11.36	4.52	0.28	4.24	46.64	53.36	5.30	7.36	1.06
"F"	1	18.93	75.47	10.30	9.80	12.42	4.25	0.63	3.62	0	100	4.53	5.87	0.34

[1] These figures were obtained by multiplying the percentage of arsenic by 3.987 (598 ÷ 150).

[2] These figures were obtained by multiplying the percentage of arsenic by 0.5172 (see footnote 11).

[3] Sample No. 3 of manufacturer "A," No. 2 of "B," No. 1 of "C," and No. 1 of "D" were allowed to react with the iodine in alkaline solution for only one minute.

[4] For example, the figure 3.69 is obtained by subtracting the 0.27 per cent of sulfur as sulfate from the 3.96 per cent of total sulfur by the iodine method.

[5] For example, in the case of No. 1 "A," the first figures in these columns were derived as follows: Subtracting the 3.96 per cent of sulfur by the iodine method from the total sulfur of 10.76 leaves 6.80 per cent of sulfur as sulfarsphenamine. Since the percentage of arsenic was 20.2, the mono-substitution product would require 4.31 per cent (20.2×0.2133) of sulfur, thus leaving 2.49 per cent of sulfur available for the di-substitution product, which would correspond to 57.77 per cent of the latter. Subtracting this figure from 100, leaves 42.23 as the indicated percentage of the mono-substitution product. Since these calculations are dependent on several separate determinations (arsenic, total sulfur, and sulfur by the iodine method), each of which has its experimental error, we must regard these figures as only approximate and we need not be surprised if in some instances the indicated organically combined sulfur apparently exceeds a little that which would correspond to the di-substitution product. On the other hand, this apparently small excess of organically combined sulfur may have some significance and should be examined more closely when more exact methods become available.

[6] The method of calculation was similar to that employed in the case of neoarsphenamine (see footnote 5 of Table 6); but since one molecule of formaldehyde bisulfite when oxidized by iodine in alkaline solution takes up only two atoms of oxygen and hence is equivalent to only four atoms of iodine, 1 c. c. of the 0.1 N iodine solution is equivalent to 0.8 mg. (3.2÷4) of sulfur. Thus, for example, the figure 4.61 is obtained by dividing 3.69 (3.96—0.27) by 0.8.

[7] See footnote 6 of Table 6.

The results given in Table 7 indicate that the sulfarsphenamine of some manufacturers ("B" and "F") contains sufficient organically combined sulfur to account for a 100 per cent di-substitution product. On the other hand, two of the samples examined apparently did not contain sufficient organically combined sulfur to account for even about 50 per cent of the mono-substitution product.

When we remember that the figures representing the calculated 0.1 N iodine equivalent of the oxidizable sulfur given in Tables 6 and 7 are based on the results of several separate determinations (arsenic, sulfur as sulfate, and sulfur by the iodine method), each of which has its experimental error, and are also dependent on the empirical factor used for calculating the iodine equivalent of the arsphenamine portion, it seems reasonable to conclude that the several comparatively close agreements between the calculated and found values indicate a fair check on the assumptions on which the calculations are based. Likewise, the number of comparatively close agreements, in Table 7, between the amount of 0.1 N iodine found to require on direct titration and the corresponding calculated equivalent of the arsphenamine portion may be taken as a fair check on the empirical factor used in calculating the iodine equivalent of the arsphenamine portion.

In order to obtain direct evidence bearing on the correctness of the assumption that, where there is a considerable difference between the result for total sulfur and the corresponding figure obtained by the iodine method, this difference probably represents an approximate measure of the quantity of a sulfarsphenamine-like impurity, the following experiment was carried out:

Two mixtures of neoarsphenamine and sulfarsphenamine, designated as No. 1 and No. 2, respectively, were prepared by mixing equal weights of commercial samples of neoarsphenamine and sulfarsphenamine. Neoarsphenamine No. 4 of manufacturer "A" (Table 6) and sulfarsphenamine No. 2 of manufacturer "B" (Table 7) were used for preparing mixture No. 1, and neoarsphenamine No. 2 of manufacturer "B" and sulfarsphenamine No. 2 of this same manufacturer were used for preparing mixture No. 2. The iodine method described in this paper was then applied to 0.1 g. of each of these mixtures. This method showed 6.20 per cent sulfur in mixture No. 1 and 7.46 per cent sulfur in mixture No. 2. The total sulfur of mixture No. 1 was 10.51 per cent and that of mixture No. 2, 11.96 per cent. If we assume that the difference between the total sulfur and that obtained by the iodine method represents the approximate quantity of the sulfarsphenamine, the above results would indicate 40.27 per cent of sulfarsphenamine in mixture No. 1 and 42.05 per cent in mixture No. 2. The corre-

sponding calculated [12] percentages, based on the results of the separate analyses of the constituents of these mixtures, are 39.33 and 39.85, respectively.

Inasmuch as this paper includes a number of features, some of which could be utilized independently, it might be well to discuss briefly several of them.

In the first place, it is to be noted that the procedure described at the beginning of this paper, which has been referred to as the iodine method, is a new method for determining the sulfur of neoarsphenamine. This method is even simpler and requires less time than the writer's previously reported [13] method, and certainly is much more convenient for routine work than either the Carius or sodium peroxide fusion methods. In addition to these advantages, it apparently has the further very important advantage that it is a very selective method for the sulfur of neoarsphenamine and can be used for the determination of the sulfur of this compound even in the presence of such a closely related sulfur-containing compound as sulfarsphenamine. This method, therefore, enables us also to estimate the sulfarsphenamine in a mixture of neoarsphenamine and sulfarsphenamine. All we need do in order to accomplish this latter purpose is to determine also the total sulfur. The difference between the total sulfur and the sulfur by the iodine method apparently is a measure of the sulfarsphenamine-like impurity in neoarsphenamine.

When this work was first undertaken, some preliminary experiments were carried out with the object of utilizing indigo disulfonate [14] for the purpose of estimating neoarsphenamine in mixtures of this substance with sulfarsphenamine. It was soon realized, however, that inasmuch as under present conditions assuredly pure preparations, which might serve as standards, are not available, it would be desirable to be able so to conduct this investigation that we could obtain confirmatory evidence which is not dependent on the substances used being assuredly pure. It occurred to the writer that this might be accomplished by taking advantage of the reasonable expectation that when neoarsphenamine or sulfarsphenamine is

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[12] It may be helpful to indicate the steps in these calculations. In the case of mixture No. 1, the sulfarsphenamine which was added showed an arsenic content of 19.40 per cent, which would correspond to 77.35 per cent sulfarsphenamine (19.4 × 3.987). If we do not allow for any experimental errors in the figures for total sulfur and sulfur by the iodine method in the case of the neoarsphenamine of this mixture, these figures would indicate a sulfarsphenamine-like impurity of 1.31 per cent (8.84−8.70=0.14; 0.14×9.344=1.31). This mixture (equal weights of the neoarsphenamine and sulfarsphenamine) should contain a percentage of sulfarsphenamine just half of the sum of the corresponding percentages in the constituents of this mixture, i. e., 39.33 (77.35+1.31=78.66; 78.66÷2=39.33). Similarly, in the case of mixture No. 2 the results of the analysis of the neoarsphenamine used in this case would indicate a sulfarsphenamine-like impurity of 2.34 per cent (11.75−11.50=0.25, 0.25×9.344=2.34). This mixture, therefore, should show a percentage of sulfarsphenamine of 39.85 (77.35+2.34=79.69; 79.69÷2=39.85). In the case of mixture No. 1, the difference between the percentage of total sulfur and sulfur by the iodine method was 4.31, which would indicate a sulfarsphenamine content of 40.27 (4.31×9.344). In the case of mixture No. 2, the corresponding difference was 4.50, which would indicate a sulfarsphenamine content of 42.05.

[13] See reference 1.

[14] Pub. Health Rep., 37, 2783-2798 (1922).

oxidized part or all of the sulfur would be oxidized to sulfate and that, therefore, by determining the amount of increased sulfate at the end of the oxidation process, we could have some check on our assumptions as to the function played by the oxidizing agent. This aim at once ruled out the use of such oxidizing agents as indigo disulfonate, methylene blue, etc., which contain sulfur themselves. It seemed that the use of elementary iodine would be the ideal reagent for this purpose. The titration with iodine has the further advantage that it can be carried out without special arrangements for the exclusion of air. It required, however, considerable experimentation in order to be able to utilize iodine for this purpose and at the same time retain the following three other advantages: (1) Of utilizing an almost instantaneous reaction, thus saving time; (2) of having the reaction proceed at room-temperature, thus avoiding possibly interfering decompositions; and (3) of using a reagent for freeing the solution from the excess iodine which does not appreciably interfere with the subsequent quantitative precipitation of the sulfate as barium sulfate. The procedure given in this paper appears to have all of these advantages.

The advantage of using such a checking system in this case appears to be well demonstrated by the fact that it helped to bring about the discovery of the possible errors of interpretation of the results obtained by the Macallum procedure. Inasmuch as the latter procedure is one of the chief methods given in the literature for examining neoarsphenamine, a true interpretation of the results obtained by this method seems to be of importance.

Another feature of this paper is a simple method for estimating the amount of uncombined formaldehyde bisulfite which may be present in a sample of sulfarsphenamine. This method depends on the observation that, by the iodine method described in this paper, apparently only the sulfur of the uncombined formaldehyde bisulfite is oxidized to sulfate but not the organically combined methylene bisulfite.

Regardless of the other interpretations which might be given to the results reported in this paper, the fact that one can subject samples of commercial neoarsphenamine or sulfarsphenamine to an identical chemical treatment and show that they behave differently, appears of importance. It may be that these chemical differences do not correspond to any considerable differences in biological properties, but the plan of analysis outlined in this paper should enable us to determine this point experimentally.

When using the plan of analysis outlined in this paper and obtaining results which indicate that the sample in question contains only sufficient organically combined sulfur to correspond to the mono-

substitution product, there can be no criticism that we are making any arbitrary assumptions when we conclude that such a preparation is very far from being a 100 per cent di-substitution product; and similarly, when the results indicate that the sample in question does not contain sufficient organically combined sulfur to correspond to even 50 per cent of the mono-substitution product, we are not making any arbitrary assumptions when we conclude that such a preparation is far from being even a 100 per cent mono-substitution product. On the other hand, we can not emphasize too much that when we assume that the mono-substitution product is first formed, and it is only the organically combined sulfur in excess of that required to form the mono-substitution product that is present as the di-substitution product, this assumption is strictly arbitrary and may not be correct; but it appears advantageous for the present to make such an assumption, as it enables us to make rather rough comparisons between preparations of grossly different composition.

Finally, it may be pointed out that the plan of analysis outlined in this paper is not intended to enable one to detect fraudulent adulterations, since it is probably quite possible to introduce impurities intentionally which will interfere with the proper working of the methods given in this paper. It is rather the aim to enable the honest manufacturer to control the uniformity and composition of his own products by providing a plan of analysis which is comparatively simple of execution and suitable for routine work. As compared with the scheme of Raiziss and Falkov [15] for the examination of neoarsphenamine, it has the advantage of providing a simpler method [16] for determining the total sulfur instead of the Carius method and a simpler method [17] for determining the sulfur present originally as sulfate, besides making the plan of analysis include sulfarsphenamine and uncombined formaldehyde bisulfite.

SUMMARY

It was found that although iodine in alkaline solution readily oxidizes nearly all of the sulfur of neoarsphenamine to sulfate, it apparently does not act the same way on the organically combined sulfur of sulfarsphenamine. Advantage is taken of this difference in behavior between neoarsphenamine and sulfarsphenamine for the purpose of differentiating between these two substances. Such treatment with iodine in alkaline solution apparently differentiates also between the organically combined methylene bisulfite and that which remains in the sulfarsphenamine as uncombined sodium formaldehyde bisulfite. And in conjunction with other determinations, such as

[15] Jour. Biol. Chem., 46, 209 (1921).
[16] Pub. Health Rep., 39, 750-754 (1924).
[17] Jour. Ind. Eng. Chem., 14, 624 (1922).

the determination of arsenic, total sulfur, amount of sulfate before treatment with iodine, amount of iodine required on direct titration, and amount of iodine required in the presence of alkali, together with the deductions which may be made on the basis of these determinations, it appears possible to evaluate, at least approximately, the composition of commercial samples of neoarsphenamine and sulfarsphenamine. The results obtained by using such a plan of analysis indicate that most of the samples of neoarsphenamine examined contained but little sulfarsphenamine-like impurities. On the other hand, these results indicate that most of these samples did not contain enough organically combined sulfur to account for a di-substitution product; and that in two of the preparations examined, there was not found sufficient organically combined sulfur to account for even 50 per cent of the mono-substitution product. In the case of the samples of sulfarsphenamine examined, the results indicate that while some manufacturers turn out a product which contains sufficient organically combined sulfur to account for a 100 per cent di-substitution product there were two samples encountered which apparently did not contain sufficient organically combined sulfur to account for even about 50 per cent of the mono-substitution product.

CANYON AUTOMOBILE CAMP, YELLOWSTONE NATIONAL PARK

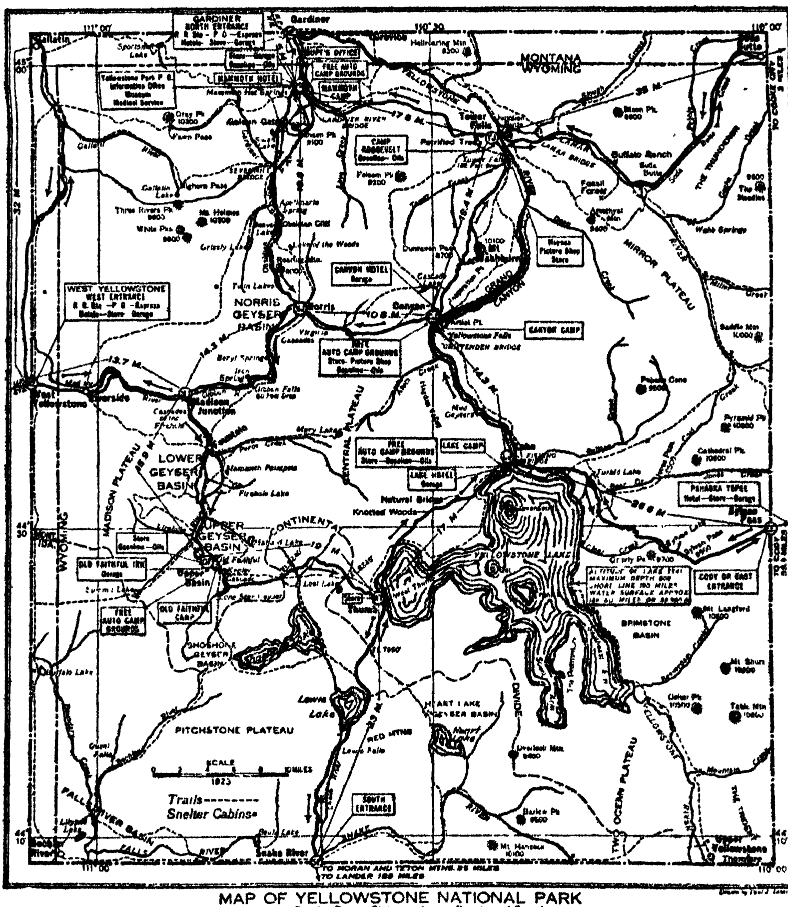
By Isador W Mendelsohn, Associate Sanitary Engineer, United States Public Health Service

The progress of the automobile industry and its influence upon public health—as a factor in the spread of communicable diseases—constitute new problems of increasing magnitude which are now receiving the attention of health officials. Persons who a few years ago remained at home now travel by automobile to Florida, Maine, California, and other States for pleasure and for business. A reliable indicator of such travel is the number of visitors at the national parks, especially Yellowstone. In 1924 there were 144,158 visitors in Yellowstone National Park, of whom 100,186 came in 30,689 automobiles. In 1923 there were 138,352 visitors, of whom 91,224 came in 27,359 cars. These visitors represented every State, as well as Alaska, the Philippines, Hawaii, the Canal Zone, and 23 foreign countries. An estimate places the number of motorists camping out in public grounds in the park at 85,000. When one considers that the park season is limited to the period between June 20 and September 20, these figures show the large congregation of people in a short period.

Realizing the attendant public health problems introduced by the mingling, in these parks, of so many people from all parts of the country and even the world, the National Park Service obtained the

cooperation of the United States Public Health Service in looking after the sanitation of the parks and assisting with medical service. Sanitary Engineer H. B. Hommon, of the Public Health Service, was placed in charge of such work in 1921, with headquarters at San Francisco, Calif., and with two sanitary engineers as assistants.

A part of the policy of Superintendent Albright, of Yellowstone National Park, is the establishment of public automobile camps at various scenic and central points in the park. These camps are to be provided with all necessary sanitary conveniences for the comfort and health of the automobile campers. Experience has shown the advisability of having many small camps, large camps with 800 or more people being unsuited to conditions in Yellowstone. In accordance with this policy, automobile camps have already been established at the principal points of interest, such as Mammoth Hot Springs, Old Faithful Geyser, Yellowstone Lake, and the Canyon of the Yel-



MAP OF YELLOWSTONE NATIONAL PARK
Norris ○ Denotes Ranger Station ←—— Direction of Travel
Distances given are between main points by road

lowstone. The Canyon automobile camp is the newest, having been begun in the 1923 season and completed in the 1924 season.

SITE OF THE CANYON AUTOMOBILE CAMP

The Canyon camp covers a plot of ground about 30 acres in extent, along the main road from Yellowstone Lake to Tower Falls, near the point where a branch road turns off to Norris Junction, as shown on the map.

The ground is level for but a small area, the remainder having a slope, pronounced in parts. The drainage is good, the run-off being toward several creeks. Most of the area used at the present time is wooded, with the trees sufficiently separated to furnish a suitable camping site for an automobile party. The lay of the camp is in a northerly and southerly direction, with plenty of sunshine, shade, and breeze. The top soil is a sand and clay, with some rocks. In places a rock formation crops out on the surface.

The camp is accessible to the main highway by two short stretches of road. There are two dirt roads in the camp, varying in width from 10 to 20 feet, as the location of the trees and the lay of the ground permit -one of the important policies of the park being not to destroy a tree nor mar natural conditions in any manner. Some conception of the camp site may be obtained from the accompanying photograph (Pl. I), showing a section of the camp.

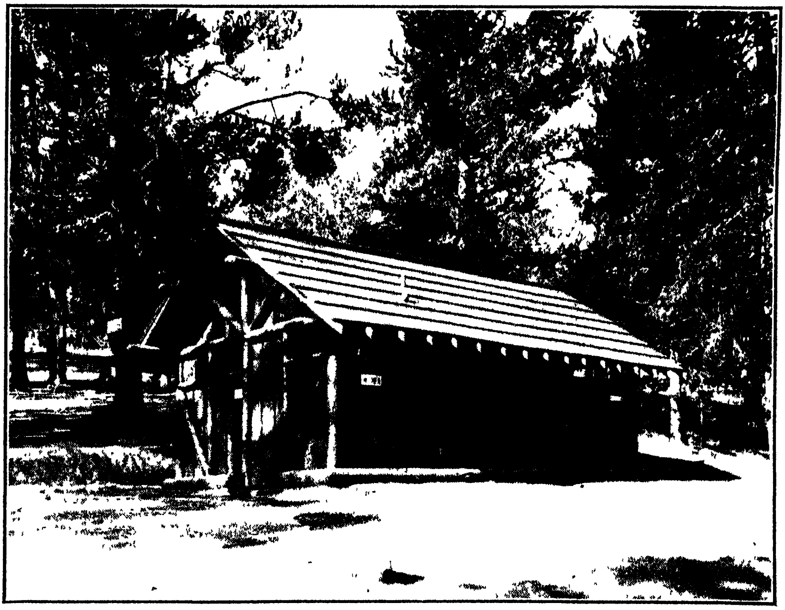
WATER SUPPLY

Water is obtained from Cascade Creek, at a concrete dam about three-quarters of a mile northwest of the camp, and one-quarter of a mile east of the Canyon-Norris Junction Road. This creek passes through stretches of wooded and open land off the beaten tourist path. Only a small number of people on horseback cross this land during the park season, and then under the supervision of experienced guides. The creek water comes from mountain springs; it is clear and soft and is not treated.

The water is forced by three hydraulic rams, having a daily capacity of about 70,000 gallons, through two 3-inch galvanized iron pipes to a two-compartment concrete reservoir of 27,000 gallons capacity. The reservoir is on land about 160 feet higher than the intake, and has a wooden board cover. A 4-inch galvanized iron pipe extends from the reservoir to the camp.

Water is furnished to the comfort stations and hydrants in camp and to the ranger station and stores near by. About 10,000 gallons of water a day are used to sprinkle the roads in order to keep down the dust.

A section of the camp



A comfort station

One of the wooden tables with benches

There are 38 water hydrants in the camp, spaced about 200 feet apart and equipped with bronze self-closing cocks. The water lines are of ¾-inch galvanized-iron pipe, extending 36 inches above the ground, and are fastened to posts or trees by galvanized-iron pipe straps, one to each hydrant. Two 2-inch No. 10 flat headed, brass, wood-screws are used on the straps. A hole has been dug in the ground beneath each spigot and filled with gravel to permit the filtration of waste water into the ground.

SEWERAGE SYSTEM

The camp has four comfort stations provided with flush toilets and washbasins. The wastes are led by an 8-inch tile sewer to a covered concrete septic tank below the ranger station, where the effluent is chlorinated in a special section of the tank designed for a contact period of 30 minutes. The sludge will be removed at the end of each season onto a drying bed located adjacent to the tank. The chlorinated effluent is discharged into a creek leading to Yellowstone River. The disposal plant was completed at the end of the 1924 season, and is so located as not to cause a nuisance. It is practically hidden among the trees, all natural facilities being utilized to screen it from the passers-by on the road. The plant will be operated by the sanitary engineer of the United States Public Health Service detailed to Yellowstone National Park, under the supervision of Sanitary Engineer Hommon.

The 4 comfort stations have 16 flush closets and 4 washbasins for women, and 15 flush closets, 4 urinals, and 4 washbasins for men. At the present time one of the men's flush closet compartments is used for storage of the caretaker's materials, but generally the space between the men's and women's sections is used as a storage place. The comfort stations are cleaned daily by a caretaker, paper being removed, the floors washed down, and a deodorant placed in the flush bowls and the urinals. Toilet paper is provided in these buildings, but no soap.

The comfort stations are so located as to be readily available to the automobile tourists. They are of a pleasing rustic design, harmonizing well with their surroundings. They were designed by the landscape engineer of the National Park Service. A layout of one of these stations is shown in Figure 1. Following is a complete list of materials and plumbing equipment.

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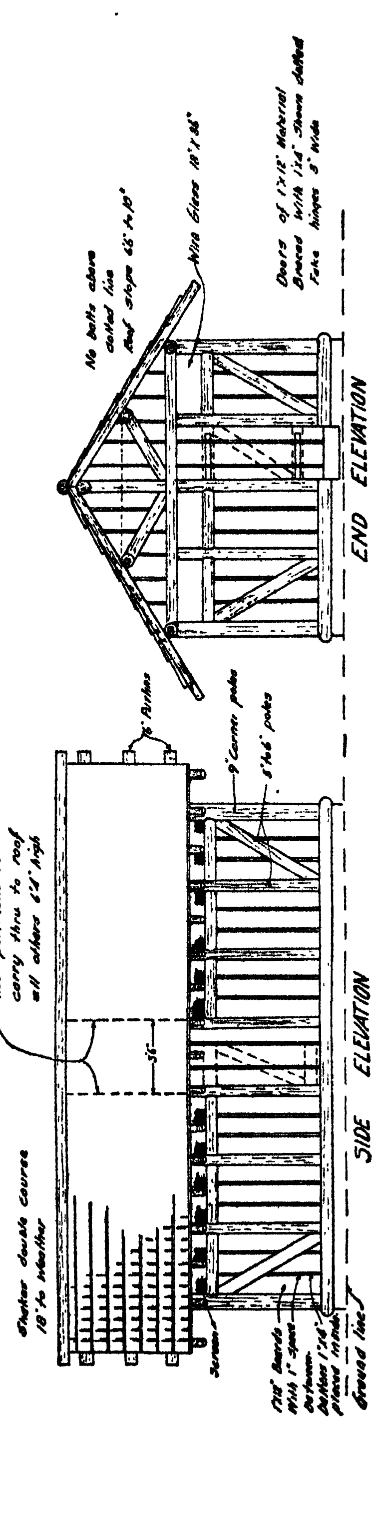


No bolts above dotted line
Roof slope 6" to 10"
Wire Glass 18" x 36"
Doors of 1"x12" Material Braced with 1x6" Shown dotted Fake hinges 3' Wide
END ELEVATION
6" Purlins
9" Corner poles
5" to 6" poles
These partitions to carry thru to roof all others 6'8" high
Shakes double course 18" to weather
Screen
1"x12" Boards With 1" Space Between
Battens 1"x6" placed inside
Ground line
SIDE ELEVATION

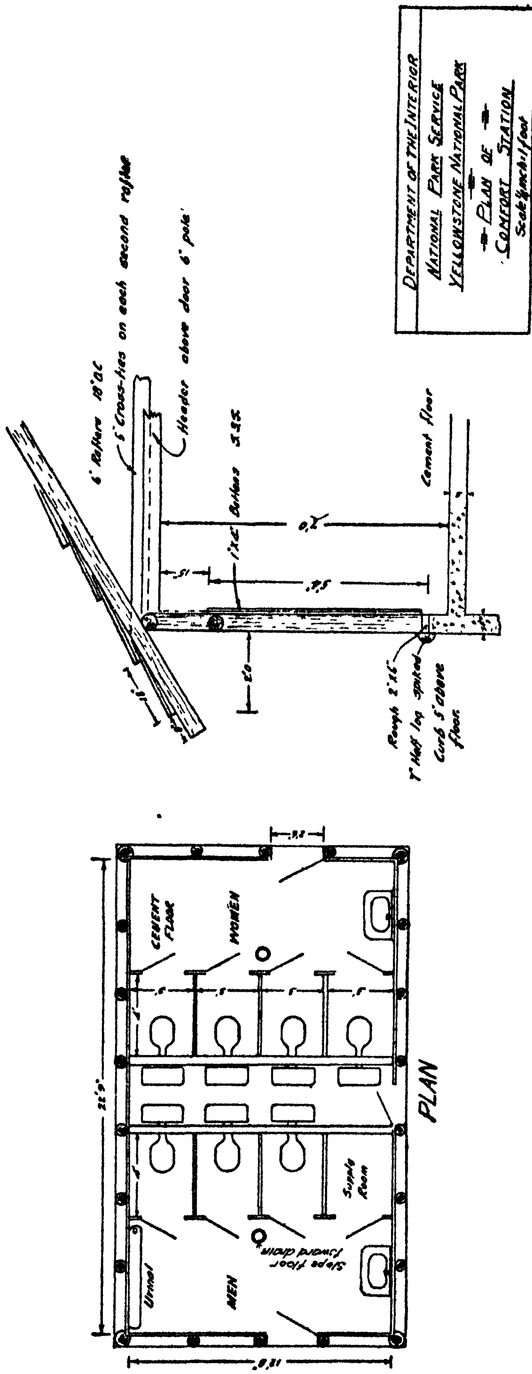


FIG 1.—Layout of comfort station

List of material for one comfort station

LOG LIST

Number	Size	Length	Linear feet	Use	Number	Size	Length	Linear feet	Use
	Inches	*Ft. In.*				*Inches*	*Ft. In.*		
18	6	7 0	126	Sides	2	6	4 0	8	Ridgepole support.
18	6	2 11	54	Cross braces	4	9	7 0	28	Corner logs.
34	5-6	11 6	391	Rafters.	2	7	23 9	48	Half logs.
5	6	28 6	143	Purlins.	2	7	13 8	28	Do.
2	6	12 10	26	Headers	8	5	14 0	112	Cross braces.
12	6	5 0	60	Corbel braces					

LUMBER

Pieces	Size	Description	F. B. M.	Pieces	Size	Description	F. B. M.
23	2″ x 4″ x 12′	C R	184	3	1″ x 6″ x 12′	S. 1S.	18
96	1″ x 12″ x 16′	S 1S.	1,536		1″ x 8″	Shiplap	900
50	1″ x 4″ x 12′	S 1S. 2E.	200	8	2″ x 6″ x 10′	C. R	80
13	2″ x 4″ x 12′	S. 4S	104				

CEMENT

35 sacks of cement, 1-5 bank run gravel, with 1 sack of cement for floating

HARDWARE

2 rim locks
3 padlocks
3 hasps and staples
8 pairs spring hinges, adjustable tension.
3 pairs 6-inch strap hinges.
2 pairs fake hinges, ¼ by 2 by 27 inches.
2 boxes No. 7 screws.
25 pounds nails, 6d.
10 pounds finishing nails, 6d.
10 pounds nails, 10d.
10 pounds spikes, 60d.
25 pounds spikes, 100d.
30 ⅜ by 13-inch round iron drift pins.
25 pounds 5d. galvanized nails for shakes.

MILLWORK

8 doors, 4-panel—24 by 60 inches—1-inch material

SHAKES

57 bundles (30 shakes to each bundle)

PLUMBING MATERIAL

40 feet 4-inch d. h. extra heavy soil pipe.
20 feet 2-inch d. h. extra heavy soil pipe
20 feet 4-inch s h. extra heavy soil pipe.
10 feet 2-inch s. h. extra heavy soil pipe.
2 4-inch c. i. floor drains, with spigot ends, to calk into extra heavy soil pipe
4 4-inch extra heavy double Y branches.
4 4-inch extra heavy single Y branches.
1 4-inch by 2-inch extra heavy Y branch.
3 4-inch extra heavy one-eighth bends.
6 4-inch extra heavy one-sixteenth bends.
3 4-inch extra heavy one-fourth bends with 2-inch high heel inlet, extra heavy
1 4-inch clean out
1 4 by 4 inch extra heavy offset.
1 4-inch roof-flashing lead.
1 2-inch roof-flashing lead
10 2-inch extra heavy one-eighth bends.
1 4-inch extra heavy 4 by 1½ inch tapped cross.
8 4-inch calking ferrules.
9 feet 4-inch 6-pound lead soil pipe.
20 pounds wiping solder.
170 pounds calking lead.
25 pounds oakum (rope).
8 brass closet flanges.
8 asbestos graphited rings.
16 closet-floor bolts
16 closet screws
16 N P. oval washers.
16 N. P. round washers.
2 pounds tinner's solder.
30 feet 1½-inch galvanized iron pipe.
2 1½-inch galvanized iron elbows.
2 1½ by 1½ by 1¼ inch G. I. tees.
1 1½-inch G I. tee
1 2 by 1½ inch G I. reducing coupling.
3 1½-inch ring hangers
24 1 by 12 wood screws
10 ⅜-inch compression stops.
2 ⅜-inch basin cocks.
2 N P. cock-hole covers.
2 1¼ inch basin plugs.
1 1¼-inch slip nut.
1 1½-inch slip nut.
2 ½-inch hose bibbs
2 2 by 2 by ½ inch G. I. tees.
14 ½-inch G. I. elbows.
4 ½-inch G. I tees.
4 ½-inch G. I. plugs
20 ½-inch G. I. nipples.
6 ½-inch G. I 45° elbows.
3 ½-inch gate valves.
1 1½-inch gate valve.
24 1-foot 10-inch r. h wood screws.
8 reverse-trap siphon-action closet bowls.
8 standard white enamel concealed low-down closet tanks.
8 closet seats, whale-bonite, open front.
8 feet ⅜-inch G. I. pipe.
2 ½ by ⅜ inch G. I. reducing couplings.
4 ⅜-inch G. I. nipples.
8 ½ by ⅜ inch G. I. elbows.
1 1½-inch N. P. "O" trap, with c. o. screw.
2 1¼-inch N. P. "O" trap, with c. o. screw.
1 60-inch white enamel urinal, rolled rim, with brass wash-down pipe and beehive strainer.
2 white enamel 20 by 16 inch washbasins.

Although the drawing shows but seven flush closets, and one locker for storage, the list of equipment is for eight flush closets. The comfort stations were installed at a cost of about $900 apiece. This price was made somewhat high by the high freight charges on materials to the park, and also by the drayage in the park to the camp. A comfort station of this type could be installed at considerably less cost near cities, where the materials are readily available and the freight rates and hauling charges are reasonable.

GARBAGE AND REFUSE DISPOSAL

For the disposal of garbage and refuse from the campers, small, shallow pits were dug throughout the camp at sufficiently frequent intervals to be convenient to the tourists. These pits are cleaned out daily by the camp cleaner, who hauls the garbage and refuse in a horse-drawn cart to a plot of ground about 1 mile from the camp. At this place the wastes are dumped into a pit and covered with earth. Ashes from campfires are collected and disposed of in the same manner.

MOSQUITO-CONTROL MEASURES

Owing to heavy snows and depressions in the ground about the camp, the mosquito infestation was heavy. The mosquitoes prevailing, however, were not of the malaria-carrier type. At the beginning of the 1924 season, oiling was resorted to, because of the short time available and the lack of funds and personnel. Crankcase oil was sprayed over the pools at weekly intervals on three occasions. The work was concentrated on an area within a quarter of a mile of the camp. Toward the end of the season, when funds were available, the depressions were drained. In the future, pools will be drained wherever possible at the beginning of each season, or oiled, until the land within a half mile of the camp is free from mosquitoes. As additional funds become available, farm drain tile will be used as a means of removing breeding places for mosquitoes.

RECREATION, STORE, AND OTHER FACILITIES

On the main road about 200 feet from the camp is a log ranger station and community house combined in one building. The community house side of the building is large and commodious and is furnished with a fireplace, toilets, and wash rooms. Mail for campers may be left at the ranger station, but a mail box is provided in the camp. There is a daily mail service throughout the park season. General information regarding the park is furnished at the station.

Within a few hundred yards of the ranger station are a general merchandise and grocery store, a photograph supply store, a gasoline filling station, and an automobile supply store. A small fruit and grocery store is located at one corner of the camp.

Good fishing streams are within one-quarter of a mile of the camp. The Grand Canyon of the Yellowstone River is within the same distance. The Canyon Hotel and the Canyon Permanent Camp are about one-half mile from the automobile camp. These provide additional entertainment and comforts. Horses are available at these places for interesting scenic rides in the vicinity.

For the convenience of the campers, 30 wooden tables and benches are provided. The tables are 9 feet long by 30 inches wide by 30 inches high, with benches 10 inches wide on each side, fastened to the table. The bill of material for a table with benches is as follows:

45 linear feet 2 by 10 inch planks, surfaced one side.
24 linear feet 2 by 6 inch planks, surfaced one side.
12 linear feet 4-inch log.
6 6-inch logs 6 feet long.
3 pounds 16-penny nails.
1 pint boiled linseed oil for table coating.

Logs 6 inches in diameter set 3 feet in the ground are used for table legs. The 4-inch logs are fastened to the end logs under the ground to prevent the uprooting of the tables by the campers. This type of table is illustrated in the accompanying photograph.

Wood for camp fires is supplied by the Government from fallen trees or from waste boxes from the hotel and the permanent camp. It is cut to convenient lengths and placed in several piles about the camp.

Everywhere throughout the camp signs have been placed to bring important facilities and regulations to the attention of the tourist. These are of wood or metal, painted white, with green letters, and are attached to trees or posts. The signs read as follows: "Dump Refuse Here;" "Water;" "Clean Your Camp;" "Carefully Extinguish Your Camp Fire." At the reservoir is the following sign:

DRINKING WATER
HELP KEEP IT
PURE
FOR OTHERS

There are other signs, such as those directing to toilets and those giving directions to various places in the park. Also the most important regulations are posted.

POLICING OF THE CAMP

The camp is policed by the park rangers. Every day toward evening one of the rangers from the near-by station visits the camp to see that the camp fires are cared for so as to prevent forest fires, to note the cleanliness of the camp, to instruct the campers re-

garding camp clean-up before departure, and to count the number of cars in the camp.

In addition to the foregoing, each car is checked upon entering and leaving the park at the four exits. Upon entrance, a permit is issued, the charge for which is $7.50 per car. The permit is as follows:

No. 20758

DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE

YELLOWSTONE NATIONAL PARK AUTOMOBILE PERMIT

(Issuing station) (Date)

(State) (License No.) (Make)

Fee paid by and permit issued to: (Name of owner or of driver)

Address

(Number of passengers) (Number of firearms)

(Number of dogs) (Breed)

NOTE.—This permit is issued and accepted subject to the regulations governing the park, and entitles the permittee to right of passage over any or all of the roads open to traffic within the park. It is void after December 31 of the year of issue, is not transferable, and if lost can not be duplicated. It must be conveniently kept and must be exhibited to park rangers on demand. Any erasure makes this permit void.

This permit system affords a close check on the automobiles and has time and again resulted in the apprehension and punishment of some motorist who has committed a misdemeanor in the park.

The camp was opened on July 26, 1924, and closed on September 15. The number of automobiles in the camp daily is given in the following table:

Number of automobiles daily in Canyon automobile camp, 1924

Date	Number	Date	Number	Date	Number	Date	Number
July 26	125	Aug. 8	158	Aug. 21	90	Sept. 3	50
27	130	9	149	22	86	4	45
28	123	10	99	23	82	5	23
29	143	11	123	24	71	6	32
30	160	12	153	25	56	7	30
31	120	13	161	26	60	8	18
Aug. 1	110	14	120	27	50	9	26
2	115	15	115	28	55	10	20
3	88	16	130	29	50	11	23
4	135	17	122	30	65	12	17
5	142	18	90	31	60	13	16
6	148	19	98	Sept. 1	52	14	15
7	149	20	115	2	54	15	10

The table shows a total of 4,495 cars on 52 days, or a daily average of over 86 automobiles. The number of cars actually staying at the camp is greater, owing to the arrival of cars at night, after the

count. Records in Yellowstone show that each car contains on the average 3.32 people. This would indicate a total attendance of 14,923 people for the above period, or a daily average of 287 people.

SUMMARY

In order to take care of the many automobile tourists in Yellowstone National Park, camps with many comforts and sanitary conveniences are being laid out as rapidly as funds are made available. The Canyon Automobile Camp, the latest to be opened, was completed at the end of the 1924 park season. The water supply, sewerage system, garbage and refuse disposal, mosquito-control measures, stores, service facilities, policing, and management of this camp are described in this paper. Of particular interest are the rustic type of comfort station and the tables and benches installed in the camp.

Acknowledgments.—The writer wishes to acknowledge his appreciation to Superintendent Albright and Master Plumber Wiggins, of Yellowstone National Park, for their assistance in furnishing data for this paper.

CURRENT WORLD PREVALENCE OF DISEASE

REVIEW OF THE MONTHLY EPIDEMIOLOGICAL REPORT FOR APRIL 15, 1925,[1] ISSUED BY THE HEALTH SECTION OF THE LEAGUE OF NATIONS' SECRETARIAT

The Far Eastern Bureau of the Epidemiological Intelligence Service of the Health Section of the League of Nations is now functioning,[2] and telegraphic information for three weeks (March 22 to April 11) is included in the Monthly Epidemiological Report, issued April 15 at Geneva. This bureau "already receives weekly telegraphic reports on the sanitary situation in the principal ports of the Dutch East Indies, Federated Malay States, Philippine Islands, Straits Settlements, and in Hongkong. Similar reports have been promised by the health services of other countries in the Far East and are expected to be available shortly. The information received is being broadcast every Friday from the wireless station of the Government of French Indo-China for the use of health services interested." Thus an exchange of epidemiological data is effected between important ports in the Far East with great promptness, and the information is made available in the Epidemiological Report several weeks earlier than was formerly possible.

These telegraphic reports refer chiefly to plague, cholera, and smallpox; but any other serious epidemic disease is to be reported.

[1] From the Statistical Office, United States Public Health Service.

[2] See Public Health Reports, May 1, 1925, p. 896.

In the April Epidemiological Report the weekly mortality rates (all causes) for the usual group of large cities are given to or including March. These rates seem to indicate that the winter season of 1924–25 has been generally more favorable in the European cities than the winter season of 1923–24. The epidemics of mild influenza in some parts of Europe, referred to previously in these reviews, never became serious, and no other epidemics have occurred to accentuate the normal seasonal rise in the winter months. The mortality was lower during the past winter than in the preceding winter, particularly in the cities of Central Europe and in England and Wales. The rates in the following table are averages of the weekly annual rates published in the Report and give the annual rates for periods of four weeks.

TABLE 1.—*General mortality rates by four-week periods*[1] *(on annual basis) for a number of European cities in the winters of 1923–24 and 1924–25*

Date,[2] 4 weeks ending—	105 English towns		Paris[3]		Amsterdam		Copenhagen	
	1923-24	1924-25	1923-24	1924-25	1923-24	1924-25	1923-24	1924-25
Dec 27	14.2	12.1	16.1	16.1	10.0	10.3	11.8	10.8
Jan 24	14.6	14.2	19.2	17.0	11.7	10.6	13.5	11.4
Feb. 21	17.2	14.8	17.1	17.1	10.7	9.4	13.1	12.3
Mar. 21	19.4	15.0	[4] 20.4	[4] 17.6	[4] 9.7	[4] 10.0	15.8	13.1
	46 German towns		Warsaw		Budapest		Milan[5]	
	1923-24	1924-25	1923-24	1924-25	1923-24	1924-25	1923-24	1924-25
Dec. 27	12.6	11.5	14.8	12.7	17.8	15.0	13.3	12.9
Jan 24	13.0	12.0	17.7	15.1	19.3	16.0	14.4	13.8
Feb 21	13.0	11.8	18.4	14.2	23.9	17.6	15.2	15.7
Mar 21	[4] 14.1	[4] 12.0	[4] 16.5	[4] 14.6	[4] 24.5	[4] 19.2	--------	--------

[1] Weekly rates on an annual basis were averaged for the four-week periods indicated.
[2] Dates are for 1924-25 season, corresponding periods in 1923 24 are given
[3] Original data are by 10-day periods, average of three periods has been used, i e., for calendar month.
[4] Three weeks only—average for period Feb. 22 to Mar 14, except for Paris, where average is for two 10-day periods
[5] Rates are for calendar months December, January, and February

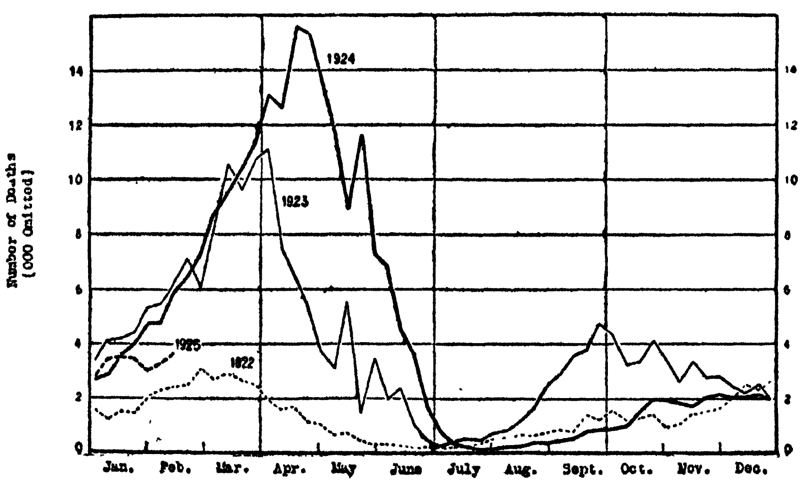
In the United States the average mortality rates for 60 cities have shown no unusual seasonal increase during the past winter, although the average rates in December and January were somewhat above those of the previous winter in the same period. Of the large cities, Boston showed the greatest increase over the death rates for the 1923–24 winter, whereas in San Francisco the rate was more favorable this winter than in the preceding winter.

TABLE 2.—*General mortality rates by four-week periods in certain cities of the United States, compared for 1924–25*

City and year	Average mortality rate (annual basis) for 4 weeks ending—			
	Dec. 27	Jan. 25	Feb. 21	Mar. 21
60 cities:				
1924–25	13.2	14.4	14 3	14.6
1923–24	12.4	13.5	14.0	14.6
Boston				
1924–25	15.2	16.7	18.1	18.2
1923–24	13.9	15.4	15.4	15.4
New York:				
1924–25	12.5	13.8	13.8	13.2
1923–24	11.2	12.6	13.3	14.1
Chicago.				
1924–25	11.9	13.0	12.8	13.7
1923–24	11.4	12.5	12.5	12 8
New Orleans:				
1924–25	19.9	21.0	23 4	20.4
1923–24	18.8	20.4	23.3	21.0
San Francisco.				
1924–25	14 5	15.7	14.0	13.0
1923–24	15.4	16.6	14.7	14.6

Plague.—With the exception of two cases of plague in Egypt, one in the Province of Minia reported April 1 and one fatal case at Suez on April 2, the countries bordering on the Mediterranean reported no case of plague in the month intervening between the publication of the March and April issues of the Epidemiological Report.

WEEKLY PLAGUE MORTALITY IN BRITISH INDIA



The plague incidence in India is the lowest for this time of year since 1922. In the four weeks ended February 14, there were 13,496 deaths notified, a slight increase over the previous four weeks' total of 11,759 deaths. The increase occurred mostly in the Punjab and the United Provinces.

In Java, where the number of deaths from plague in December, 1924, was 3,041—the highest ever recorded—there was a marked decline in the number of deaths reported during January, a total of 2,110 deaths having been notified from January 1 to 28. "The province of Banjumas, in which plague has been very prevalent since June, 1924, has never before been infected," states the Report, otherwise the epidemic has been restricted to those Central Provinces which had already been infected and had regularly reported the majority of plague deaths in Java.

Plague incidence was relatively low in the infected areas of Africa in December and January, and it has been declining in most countries. Only 7 new cases were reported in the Union of South Africa during the 3 weeks ending March 17 as compared with 26 from February 1–25. In Madagascar, on the other hand, 228 cases of plague were reported in February as compared with 143 in January.

Cholera.—Cases of cholera were reported from Ceylon, Indo-China, Siam, and British India in the month preceding that of the publication of the Epidemiological Report. The number of cases reported was as follows:

Locality	Date	Number of cases	Number of deaths
Ceylon	Feb 22–Mar 21	8	8
British India	Jan. 11–Feb. 7	10,759	6,418
Indo-China			
Cochin-China	January	5	
Do	February	4	
Cambodia	January	5	
Siam	Jan 25–Feb 21	8	5

Little change is shown in the incidence of cholera in India as compared with the previous four weeks' period. The Report states: "Nearly all the cases occurred in the Presidencies of Madras and Bengal. Madras was more heavily infected than during the corresponding season of 1924, four-fifths of all the cases reported in India occurring here. Cholera never disappears from Bengal, and its fluctuations here are smaller than in the rest of India."

Typhus and relapsing fever.—The January reports for Russia showed little increase in the cases of typhus in most of the governments from which data were available. The governments of Nijni Novgorod, with 495 cases, and Riasan, with 346 cases, reported the largest number; the government of Pskov, where typhus has not been prevalent in recent years, reported 205 cases as against 124 in December, 1924. Only 1 death from typhus was reported in January in the city of Moscow. Cases of relapsing fever in Russia numbered about one-sixth of the typhus cases.

In Poland, there were 503 cases of typhus reported during February, fewer than in the corresponding period of each of the preceding three

years. Only 10 cases of relapsing fever were notified during February.

The incidence of typhus fever in the Union of South Africa also has steadily diminished since 1922. In January, 1925, 96 cases were reported.

Smallpox.—"Smallpox cases were reported during the first months of 1925 from England, France, Switzerland, Spain, Greece, and Russia; the disease was practically absent from the rest of Europe," states the Report. The course of the disease in the past year in the above-mentioned European countries and in a number of non-European countries is shown in Table 3.

TABLE 3.—*Cases of smallpox notified in various countries, 1924–25*

Four weeks ending—	England and Wales	Switzerland	Poland	Egypt	India (deaths)	Java	Hongkong	United States
1924								
Jan. 26	364	250	94	32	1,810	304	396	3,604
Feb. 23	109	333	114	35	2,407	349	290	4,591
Mar. 22	337	162	215	86	3,414	243	148	4,997
Apr 19	400	134	163	127	3,733	281	56	5,334
May 17	454	100	86	132	3,166	241	32	4,828
June 14	301	85	97	116	2,597	336	10	3,865
July 12	242	51	17	54	2,245	241	4	2,565
Aug. 9	167	15	23	42	1,332	490	0	1,055
Sept. 6	206	34	19	41	783	902	0	777
Oct. 4	203	35	4	47	667	1,005	0	968
Nov. 1	223	14	7	38	652	753	0	1,340
Nov. 29	318	11	10	12	831	511	1	2,101
Dec. 27	285	8	11	37	1,319	413	4	2,437
1925								
Jan 24	416	19	10	8	2,242	364	18	3,540
Feb. 21	593	70	5	31	----------	----------	13	4,276
Mar. 21	533	----------	----------	----------	----------	----------	----------	3,592

Months	Russia	Greece	Spain (deaths)	France	Algeria	Tunis	Japan	Canada
1924								
January	2,639	6	64	12	7	25	462	505
February	3,679	20	34	25	19	14	451	553
March	3,456	26	34	19	8	29	282	385
April	3,518	38	14	23	7	17	297	307
May	2,935	31	22	15	10	19	83	245
June	2,002	49	38	32	12	21	67	137
July	1,047	20	75	17	9	19	51	66
August	567	8	127	20	5	45	1	83
September	683	4	158	9	61	34	2	93
October	650	5	187	15	67	80	1	185
November	718	2	209	8	111	163	0	112
December	861	2	252	15	156	140	5	120
1925								
January	----------	39	----------	10	170	135	----------	206
February	----------	----------	----------	37	126	156	----------	218

Influenza.—In most countries influenza was less prevalent during the past winter than in the corresponding season a year ago, and the epidemics which were reported seem to have been very mild. In England and Wales the mortality from influenza was only about one-half that in the preceding year.

Influenza is reported to have been widespread in Russia during the winter, but the type was mild.

Lethargic encephalitis.—The incidence of lethargic encephalitis continued high in England and Wales in comparison with that reported by other countries. Although the number of cases in England was increasing slightly during the first quarter, the March incidence was less than in the same period of 1924.

Number of cases of lethargic encephalitis in England and Wales in the first quarter of 1923, 1924, and 1925

Four weeks ending—	1923	1924	1925
Jan. 26	66	56	194
Feb. 23	151	150	231
Mar. 22	184	397	261
Apr. 19	145	806	

Poliomyelitis.—In New Zealand an outbreak of poliomyelitis began during the latter part of November and seems to have reached its maximum the middle of February. "Cases occurred in all the provinces," according to the Report. From November 10 to February 23, 622 cases and 80 deaths were reported. The weekly figures are given below:

Number of cases of poliomyelitis reported in New Zealand

Week ending—	1924		Week ending—	1925	
	Cases	Deaths		Cases	Deaths
Nov. 10	0	0	Jan. 5	19	2
Nov. 17	0	0	Jan. 12	30	4
Nov. 24	1	1	Jan. 19	60	4
Dec. 1	3	0	Jan. 26	58	9
Dec. 8	6	0	Feb. 2	88	16
Dec. 15	13	4	Feb. 9	104	19
Dec. 22	11	2	Feb. 16	138	6
Dec. 29	12	3	Feb. 23	79	10

Scarlet fever.—Scarlet fever was more prevalent during the past winter than during the preceding two winters in the Netherlands, Germany, Austria, Poland, and Russia. The February reports showed a lower incidence of scarlet fever in nearly all European countries.

Diphtheria.—The incidence of diphtheria was somewhat higher during the winter of 1924–25 than in the winter of 1923–24 in western, central, and northern Europe. The lowest incidence in recent months has been reported from eastern Europe.

REPORT OF ADVISORY COMMITTEE ON OFFICIAL WATER STANDARDS—CORRECTION

In the Report of Advisory Committee on Official Water Standards, published in Public Health Reports for April 10, 1925, the "equation of probability curve" for Case a (first line in the table on page 707) should read $y=50e^{-20\lambda}$ instead of $y=50e^{-30\lambda}$.

DEATHS DURING WEEK ENDED MAY 23, 1925

Summary of information received by telegraph from industrial insurance companies for week ended May 23, 1925, and corresponding week of 1924. (From the Weekly Health Index, May 28, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 23, 1925	Corresponding week, 1924
Policies in force	59, 943, 647	56, 109, 722
Number of death claims	11, 906	11, 057
Death claims per 1,000 policies in force, annual rate	10. 4	10. 3

Deaths from all causes in certain large cities of the United States during the week ended May 23, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, May 28, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended May 23, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended May 23, 1925 [2]
	Total deaths	Death rate [1]		Week ended May 23, 1925	Corresponding week, 1924	
Total (65 cities)	6, 807	12.8	[3] 12.4	804	[3] 833	
Akron	35			6	1	66
Albany [4]	38	16.6	17.6	5	2	111
Atlanta	83			13	6	
Baltimore [4]	230	15.1	14.1	19	27	56
Birmingham	75	19.0	17.4	9	8	
Boston	232	15.4	13.6	40	21	106
Bridgeport	26			2	4	32
Buffalo	130	12.2	12.1	20	15	81
Cambridge	23	10.7	12.6	1	3	17
Camden	27	10.9	12.4	3	2	49
Chicago [4]	659	11.5	12.5	81	136	72
Cincinnati	124	15.8	15.5	13	13	77
Cleveland	184	10.2	10.6	24	31	60
Columbus	67	12.5	11.1	7	7	66
Dallas	44	11.9	12.2	6	6	
Dayton	26	7.8	9.6	2	1	32
Denver	78	14.5	13.6	9	10	
Des Moines	38	13.3	10.4	4	1	69
Detroit	267			55	48	93
Duluth	17	8.0	14.0	0	5	0
Erie	21			2	4	39
Fall River [4]	26	11.2	13.4	3	5	43
Flint	20	8.0	4.2	3	2	49
Fort Worth	41	14.0	5.3	4	2	
Grand Rapids	44	15.0	5.6	9	1	140
Houston	50	15.8	12.7	9	5	
Indianapolis	80	11.6	11.1	7	11	48
Jersey City	70	11.6	13.2	11	10	77
Kansas City, Kans	26	11.0	11.1	1	1	21
Kansas City, Mo	94	13.3	14.1	7	12	

[1] Annual rate per 1,000 population.

[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.

[3] Data for 64 cities

[4] Deaths for week ended Friday, May 22, 1925.

Deaths from all causes in certain large cities of the United States during the week ended May 23, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924—Continued

City	Week ended May 23, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended May 23, 1925
	Total deaths	Death rate		Week ended May 23, 1925	Corresponding week, 1924	
Los Angeles	215			32	32	89
Louisville	84	16.9	20.0	7	7	61
Lowell	31	13.9	13.5	6	8	104
Lynn	19	9.5	5.5	4	1	106
Memphis	70	20.9	13.9	13	3	
Milwaukee	145	15.1	10.3	21	22	96
Minneapolis	96	11.8	12.2	9	12	48
Nashville [4]	48	18.4	19.4	7	5	
New Bedford	22	8.5	10.2	1	4	17
New Haven	42	12.2	8.0	3	4	39
New Orleans	165	20.8	18.8	29	11	
New York	1,415	12.1	12.1	176	173	70
Bronx Borough	155	9.0	9.8	16	16	55
Brooklyn Borough	496	11.6	11.2	63	57	66
Manhattan Borough	610	14.1	14.2	82	79	82
Queens Borough	114	10.4	11.1	13	20	65
Richmond Borough	40	15.6	11.6	2	1	36
Newark, N. J.	94	10.8	10.8	9	13	41
Norfolk	33			6	8	107
Oakland	41	8.4	10.1	4	4	47
Oklahoma City	23			4	9	
Omaha	42	10.3	12.5	5	6	48
Paterson	48	17.7	7.8	7	2	117
Philadelphia	518	13.6	12.0	57	47	72
Pittsburgh	179	14.8	12.8	23	28	81
Portland, Oreg.	79	14.6	13.3	6	8	62
Providence	59	12.6	10.9	9	8	72
Richmond	51	14.3	16.2	5	9	61
Rochester	87	13.7	11.7	12	4	95
St. Louis	217	13.8	12.8	12	22	
St. Paul	81	17.2	10.7	5	4	43
Salt Lake City [4]	30	11.9	12.2	2	3	31
San Antonio	46	12.1	17.7	10	17	
San Francisco	135	12.6	10.9	18	8	104
Schenectady	16	8.2	11.4	1	3	28
Seattle	68			10	8	102
Somerville	31	15.8	13.0	2	2	54
Spokane	33	15.8	10.0	2	2	44
Springfield, Mass.	33	11.3	9.1	4	1	60
Syracuse	57	15.5	13.0	5	6	63
Tacoma	17	8.5	10.6	2	3	48
Toledo	57	10.3	12.8	7	10	63
Trenton	33	13.0	14.1	1	8	16
Utica	32	15.6		2		41
Washington, D. C.	106	11.1	13.0	9	11	51
Waterbury	27			5	2	111
Wilmington, Del.	27	11.5	10.0	5	2	114
Worcester	35	9.2	16.3	2	8	23
Yonkers	21	9.8	10.9	4	3	88
Youngstown	22	7.2	12.8	1	4	13

[4] Deaths for week ended Friday, May 22, 1925.

DEATHS DURING WEEK ENDED MAY 30, 1925

Summary of information received by telegraph from industrial insurance companies for week ended May 30, 1925, and corresponding week of 1924. (From the Weekly Health Index, June 2, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended May 30, 1925	Corresponding week, 1924
Policies in force	60, 037, 150	56, 210, 959
Number of death claims	10, 495	8, 300
Death claims per 1,000 policies in force, annual rate	9. 1	7. 7

Deaths from all causes in certain large cities of the United States during the week ended May 30, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, June 2, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended May 30, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended May 30, 1925 [2]
	Total deaths	Death rate [1]		Week ended May 30, 1925	Corresponding week, 1924	
Total (64 cities)	6, 371	12. 4	[3] 12. 1	724	763	
Akron	33			6	11	66
Albany [4]	36	15. 7	15. 8	1	3	22
Atlanta	88			16	8	
Baltimore [4]	235	15. 4	13. 1	23	20	67
Birmingham	75	19. 0	15. 6	12	11	
Boston	208	13. 8	13. 2	23	25	61
Bridgeport	24			2	4	32
Buffalo	117	11. 0	11. 4	12	18	49
Cambridge	33	15. 3	11. 6	8	4	138
Camden	43	17. 4	15. 3	4	3	66
Chicago [4]	699	12. 2	11. 1	100	92	88
Cincinnati	113	14. 4	15. 5	7	12	41
Cleveland	152	8. 5	9. 6	17	31	42
Columbus	70	13. 0	13. 6	8	7	75
Dallas	65	17. 5	13. 3	14	5	
Dayton	28	8. 4	11. 7	3	8	48
Denver	71	13. 2	11. 9	6	7	
Des Moines	17	5. 9	11. 9	4	1	69
Detroit	231			36	54	61
Duluth	18	8. 5	7. 7	0	2	0
Erie	37			4	2	78
Fall River [4]	32	13. 8	15. 5	7	7	101
Flint	18	7. 2	8. 8	5	3	82
Fort Worth	37	12. 7	8. 4	4	5	
Grand Rapids	32	10. 9	9. 1	1	3	16
Houston	42	13. 3	13. 0	10	4	
Indianapolis	77	11. 2	13. 8	5	8	34
Jersey City	74	12. 2	13. 9	6	9	42
Kansas City, Kans	33	13. 9	10. 7	1	2	21
Kansas City, Mo	72	10. 2	10. 0	10	6	
Los Angeles	187			19	31	53
Louisville	59	11. 9	15. 3	0	4	0
Lowell	21	9. 4	13. 1	1	4	17
Lynn	14	7. 0	9. 1	2	1	53
Memphis	60	17. 9	18. 8	7	6	
Milwaukee	130	13. 5	9. 7	20	12	91
Minneapolis	77	9. 4	10. 2	6	13	32
Nashville [4]	40	15. 3	21. 1	5	5	
New Bedford	30	11. 6	9. 8	7	5	116
New Haven	25	7. 3	11. 6	6	2	78
New Orleans	145	18. 2	10. 0	21	17	

[1] Annual rate per 1,000 population

[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.

[3] Data for 63 cities.

[4] Deaths for week ended Friday, May 29, 1925.

Deaths from all causes in certain large cities of the United States during the week ended May 30, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924—Continued

City	Week ended May 30, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended May 30, 1925
	Total deaths	Death rate		Week ended May 30, 1925	Corresponding week, 1924	
New York	1,398	11.9	11.9	152	160	61
Bronx Borough	166	9.6	9.9	15	18	52
Brooklyn Borough	474	11.1	10.4	65	53	68
Manhattan Borough	612	14.1	14.9	58	79	58
Queens Borough	114	10.4	8.6	12	9	60
Richmond Borough	32	12.5	10.8	2	1	36
Newark, N. J	88	10.1	9.6	14	9	64
Norfolk	37			5	3	89
Oakland	41	8.4	11.4	3	8	35
Oklahoma City	22			1	0	
Omaha	67	16.5	10.3	10	3	96
Paterson	27	9.9	11.5	7	2	117
Philadelphia	518	13.6	12.5	52	60	65
Pittsburgh	148	12.2	13.8	18	22	63
Portland, Oreg	53	9.8	11.6	3	3	31
Providence	66	14.0	15.0	7	14	56
Richmond	64	17.9	12.5	11	6	133
Rochester	90	14.2	12.8	6	11	47
St. Paul	43	9.1	11.8	1	8	9
Salt Lake City [4]	31	12.3	11.8	2	5	31
San Antonio	61	16.1	14.7	9	16	
San Francisco	112	10.5	13.4	7	11	40
Schenectady	22	11.2	6.7	0	1	0
Seattle	67			7	4	71
Somerville	21	10.7	7.8	3	1	80
Spokane	28	13.4	12.5	2	1	44
Springfield, Mass	31	10.6	10.5	2	4	30
Syracuse	25	6.8	13.9	2	10	25
Tacoma	15	7.5	9.1	1	2	24
Toledo	72	13.1	11.2	8	9	72
Trenton	43	17.0	13.7	5	4	81
Utica	37	18.1		4		82
Washington, D. C	144	15.1	12.5	18	10	101
Waterbury	22			3	3	66
Wilmington, Del	20	8.5	11.7	3	3	68
Worcester	54	14.2	8.3	4	4	46
Yonkers	24	11.2	13.3	1	5	22
Youngstown	30	9.8	11.8	3	6	38

[4] Deaths for week ended Friday May 29, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended June 6, 1925

ALABAMA

	Cases
Chicken pox	7
Diphtheria	5
Dysentery	49
Influenza	20
Malaria	75
Measles	2
Mumps	14
Pellagra	14
Pneumonia	23
Poliomyelitis	1
Scarlet fever	7
Smallpox	72
Trachoma	5
Tuberculosis	71
Typhoid fever	69
Whooping cough	49

ARIZONA

	Cases
Chicken pox	7
Diphtheria	1
Measles	10
Mumps	2
Poliomyelitis	2
Scarlet fever	2
Tuberculosis	7
Typhoid fever	50
Whooping cough	6

ARKANSAS

	Cases
Chicken pox	8
Diphtheria	2
Hookworm disease	1
Influenza	34
Malaria	108
Measles	56
Mumps	17
Ophthalmia neonatorum	1
Paratyphoid fever	5
Pellagra	30
Poliomyelitis	1
Scarlet fever	5
Smallpox	2
Trachoma	1
Tuberculosis	17
Typhoid fever	23
Whooping cough	12

CALIFORNIA

	Cases
Anthrax—Los Angeles	1
Diphtheria	86
Influenza	19
Leprosy—Los Angeles County	1
Lethargic encephalitis—Los Angeles	1
Measles	84
Poliomyelitis	
Berkeley	1
Fresno	1
Healdsburg	1
Long Beach	1
Los Angeles	4
Oakland	2
San Francisco	4
Santa Cruz	1
Los Angeles County	2
Yolo County	1
Scarlet fever	120
Smallpox:	
Berkeley	10
Los Angeles	35
Los Angeles County	7
Oakland	24
San Diego	12
Scattering	31
Typhoid fever	12

COLORADO

(Exclusive of Denver)

	Cases
Chicken pox	13
Diphtheria	29
Measles	2
Mumps	13
Paratyphoid fever	1
Pneumonia	6
Scarlet fever	23
Septic sore throat	1
Smallpox	1
Tuberculosis	91
Typhoid fever	2
Vincent's angina	1
Whooping cough	8

CONNECTICUT

	Cases
Chicken pox	82
Diphtheria	34
German measles	40
Influenza	4
Lethargic encephalitis	1
Measles	360
Mumps	56
Pneumonia (all forms)	46
Scarlet fever	66
Septic sore throat	2
Tetanus	1
Tuberculosis (all forms)	32
Typhoid fever	3
Whooping cough	150

DELAWARE

Chicken pox	1
Diphtheria	1
Influenza	1
Measles	7
Mumps	4
Pneumonia	2
Scarlet fever	2
Tuberculosis	6
Typhoid fever	2

FLORIDA

Cerebrospinal meningitis	1
Chicken pox	24
Diphtheria	6
Malaria	7
Measles	6
Mumps	84
Poliomyelitis	1
Scarlet fever	5
Smallpox	5
Tetanus	1
Tuberculosis	11
Typhoid fever	12
Whooping cough	10

GEORGIA

Cerebrospinal meningitis	4
Chicken pox	36
Diphtheria	10
Dysentery	77
Hookworm disease	7
Influenza	38
Malaria	73
Measles	26
Mumps	41
Paratyphoid fever	1
Pellagra	19
Pneumonia	43
Scarlet fever	3
Septic sore throat	10
Smallpox	26
Tetanus	1
Tuberculosis	62
Typhoid fever	65
Whooping cough	54

ILLINOIS

	Cases
Cerebrospinal meningitis:	
Cook County	3
Kankakee County	1

ILLINOIS—continued

	Cases
Diphtheria:	
Cook County	85
Scattering	13
Influenza	21
Lethargic encephalitis	5
Measles	1,458
Pneumonia	202
Poliomyelitis:	
Christian County	1
McClean County	1
Scarlet fever:	
Champaign County	6
Clinton County	6
Cook County	245
Jackson County	5
Kane County	6
Ogle County	7
St. Clair County	5
Sangamon County	7
Stephenson County	7
Vermilion County	5
Scattering	59
Smallpox:	
Champaign County	3
Cook County	8
Franklin County	6
Jackson County	3
Pulaski County	3
Woodford County	17
Scattering	23
Tuberculosis	310
Typhoid fever:	
Cook County	6
Scattering	19
Whooping cough	328

INDIANA

Chicken pox	94
Diphtheria	26
Influenza	28
Measles	245
Mumps	1
Pneumonia	2
Scarlet fever:	
Allen County	27
Elkhart County	18
Laporte County	9
Marion County	9
St Joseph County	20
Scattering	51
Smallpox	63
Trachoma	1
Tuberculosis	50
Typhoid fever	14
Whooping cough	41

IOWA

Diphtheria	9
Scarlet fever	24
Smallpox	12
Typhoid fever	1

KANSAS

Chicken pox	43
Diphtheria	7
German measles	1
Influenza	8

KANSAS—continued

	Cases
Measles	6
Mumps	77
Pneumonia	11
Poliomyelitis	1
Scarlet fever	31
Smallpox	5
Tuberculosis	59
Typhoid fever	4
Whooping cough	68

LOUISIANA

Cerebrospinal meningitis	1
Diphtheria	6
Influenza	16
Leprosy	1
Malaria	24
Pneumonia	58
Scarlet fever	22
Smallpox	6
Tuberculosis	45
Typhoid fever	59

MAINE

Chicken pox	12
Diphtheria	3
German measles	3
Influenza	8
Measles	9
Mumps	96
Pneumonia	8
Poliomyelitis	1
Scarlet fever	11
Tuberculosis	14
Typhoid fever	1
Vincent's angina	1
Whooping cough	5

MARYLAND

Cerebrospinal meningitis	2
Chicken pox	99
Diphtheria	26
Ileocolitis	2
Influenza	19
Malaria	1
Measles	65
Mumps	63
Pneumonia:	
Broncho	17
Lobar	40
Scarlet fever	54
Septic sore throat	3
Smallpox	3
Tuberculosis	70
Vincent's angina	2
Whooping cough	110
Typhoid fever	11

MASSACHUSETTS

Cerebrospinal meningitis	1
Chicken pox	193
Conjunctivitis (suppurative)	21
Diphtheria	100
German measles	359
Hookworm disease	2
Influenza	8
Lethargic encephalitis	2
Measles	888
Mumps	55

MASSACHUSETTS—continued

	Cases
Ophthalmia neonatorum	22
Pellagra	2
Pneumonia (lobar)	75
Poliomyelitis	1
Scarlet fever	219
Septic sore throat	2
Tetanus	2
Trachoma	4
Trichinosis	4
Tuberculosis:	
Pulmonary	130
Other forms	67
Typhoid fever	5
Whooping cough	140

MICHIGAN

Diphtheria	84
Measles	711
Pneumonia	221
Scarlet fever	391
Smallpox	27
Tuberculosis	79
Typhoid fever	10
Whooping cough	289

MINNESOTA

Chicken pox	206
Diphtheria	60
Influenza	3
Measles	29
Pneumonia	1
Scarlet fever	181
Smallpox	11
Tuberculosis	55
Typhoid fever	1
Whooping cough	30

MISSISSIPPI

Diphtheria	5
Scarlet fever	1
Smallpox	8
Typhoid fever	11

MONTANA

Cerebrospinal meningitis	1
Chicken pox	6
Diphtheria	1
German measles	12
Measles	14
Mumps	35
Scarlet fever	51
Smallpox	10
Tuberculosis	4
Typhoid fever	3
Whooping cough	17

NEW JERSEY

Cerebrospinal meningitis	4
Chicken pox	195
Diphtheria	81
Influenza	2
Measles	494
Pneumonia	140
Poliomyelitis	3
Scarlet fever	224
Smallpox	10
Trachoma	1
Trichinosis	2
Typhoid fever	10
Whooping cough	187

NEW MEXICO

	Cases
Chicken pox	9
Diphtheria	3
German measles	2
Malaria	1
Measles	7
Mumps	4
Pellagra	2
Pneumonia	7
Rabies in animals	2
Scarlet fever	5
Trachoma	1
Tuberculosis	9
Tularaemia	1
Typhoid fever	2
Whooping cough	2

NEW YORK

(Exclusive of New York City)

	Cases
Diphtheria	100
Influenza	55
Measles	865
Pneumonia	294
Poliomyelitis	1
Scarlet fever	255
Smallpox	55
Typhoid fever	21
Whooping cough	199

NORTH CAROLINA

	Cases
Chicken pox	59
Diphtheria	25
German measles	4
Measles	20
Scarlet fever	14
Smallpox	49
Typhoid fever	13
Whooping cough	98

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

	Cases
Cerebrospinal meningitis—Beckham	1
Chicken pox	13
Diphtheria	11
Influenza	49
Measles	5
Mumps	14
Pneumonia	29
Scarlet fever:	
Washington	8
Scattering	19
Smallpox	9
Typhoid fever:	
Stephens	16
Scattering	28
Whooping cough	26

OREGON

	Cases
Cerebrospinal meningitis	3
Chicken pox	19
Diphtheria:	
Portland	15
Scattering	10
Influenza	3
Measles	4
Mumps	21
Pneumonia	[1] 2

[1] Deaths.

OREGON—continued

	Cases
Rocky Mountain spotted fever	1
Scarlet fever	11
Smallpox:	
Malheur County	13
Scattering	7
Tuberculosis	23
Typhoid fever	3
Whooping cough	19

SOUTH DAKOTA

	Cases
Measles	7
Mumps	2
Pneumonia	3
Scarlet fever	34
Smallpox	4
Typhoid fever	3
Whooping cough	2

VERMONT

	Cases
Chicken pox	28
Diphtheria	1
Measles	17
Mumps	7
Scarlet fever	15
Whooping cough	6

VIRGINIA

	Cases
Smallpox:	
Henry County	1
Prince George County	1

WASHINGTON

	Cases
Chicken pox	114
Diphtheria	33
German measles	22
Leprosy—King County	1
Measles	12
Mumps	101
Scarlet fever	46
Smallpox	38
Tuberculosis	19
Typhoid fever	4
Whooping cough	200

WEST VIRGINIA

	Cases
Diphtheria	4
Scarlet fever	12
Smallpox	3
Typhoid fever	4

WISCONSIN

	Cases
Milwaukee:	
Chicken pox	36
Diphtheria	12
German measles	48
Lethargic encephalitis	1
Measles	154
Mumps	56
Pneumonia	13
Scarlet fever	12
Smallpox	40
Trachoma	1
Tuberculosis	25
Whooping cough	33
Scattering:	
Chicken pox	101
Diphtheria	30
German measles	172
Influenza	76
Measles	222

WISCONSIN—continued

Scattering—Continued	Cases
Mumps	126
Pneumonia	21
Poliomyelitis	1
Scarlet fever	58
Smallpox	19
Tuberculosis	17
Typhoid fever	2
Whooping cough	66

WYOMING

	Cases
Chicken pox	5
Diphtheria	1
Influenza	1
Mumps	7
Pneumonia	3
Rocky Mountain spotted fever—Johnson	1
Scarlet fever	1
Whooping cough	8

Reports for Week Ended May 30, 1925

DISTRICT OF COLUMBIA

	Cases
Cerebrospinal meningitis	1
Chicken pox	9
Diphtheria	12
Influenza	1
Measles	28
Pneumonia	20
Scarlet fever	17
Tuberculosis	27
Typhoid fever	3
Whooping cough	19

NORTH DAKOTA

	Cases
Chicken pox	11
Diphtheria	2
German measles	3
Measles	3
Pneumonia	6
Scarlet fever	13
Smallpox	8
Trachoma	1
Tuberculosis	1
Whooping cough	10

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
April, 1925										
Colorado		86	35		28			107	2	8
Iowa	1	65			37		2	131	37	3
May, 1925										
Arizona	1	6	24		396			23	3	12

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named:

Los Angeles, Calif.

Week ended May 23, 1925:	
Number of rats examined	2,525
Number of rats found to be plague infected	1
Number of squirrels examined	1,247
Number of squirrels found to be plague infected	1
Totals, Nov. 5, 1924, to May 23, 1925:	
Number of rats examined	104,409
Number of rats found to be plague infected	187
Number of squirrels examined	14,924
Number of squirrels found to be plague infected	9

Deat of discovery of last plague-infected rodent, May 26, 1925.
Date of last human case, Jan. 15, 1925.

Oakland, Calif.

(Including other East Bay communities)

Week ended May 23, 1925:	
Number of rats trapped	2, 254
Number of rats found to be plague infected	0
Number of squirrels examined	577
Number of squirrels found to be plague infected	0
Totals:	
Number of rats trapped Jan. 1 to May 23, 1925	48, 081
Number of rats found to be plague infected	21
Number of squirrels examined May 1 to May 23, 1925	1, 273
Number of squirrels found to be plague infected	0

Date of discovery of last plague-infected rat, Mar. 4, 1925.
Date of last human case, Sept. 10, 1919.

New Orleans, La.

Week ended May 23, 1925:	
Number of vessels inspected	341
Number of inspections made	1, 018
Number of vessels fumigated with cyanide gas	22
Number of rodents examined for plague	5, 658
Number of rodents found to be plague infected	0
Totals, Dec. 5, 1924, to May 23, 1925:	
Number of rodents examined for plague	108, 645
Number of rodents found to be plague infected	12

Date of discovery of last plague-infected rat, Jan. 17, 1925.
Date of last human case occurring in New Orleans, Aug. 20, 1920.

TULARAEMIA IN TEXAS

Two cases of tularaemia have been reported from Texas. One case at Longview, April 29, 1925, and one at Bryan, May 5.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.- For the week ended May 23, 1925, 35 States reported 1,292 cases of diphtheria. For the week ended May 24, 1924, the same States reported 1,532 cases of this disease. One hundred and three cities, situated in all parts of the country and having an aggregate population of nearly 28,700,000, reported 845 cases of diphtheria for the week ended May 23, 1925. Last year, for the corresponding week, they reported 924 cases. The estimated expectancy for these cities was 922 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty-two States reported 5,950 cases of measles for the week ended May 23, 1925, and 10,274 cases of this disease for the week ended May 24, 1924. One hundred and three cities reported 3,321 cases of measles for the week this year, and 3,713 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 35 States—this year, 3,014 cases; last year, 2,716 cases; 103 cities—this year, 1,699; last year, 1,308; estimated expectancy, 940 cases.

Smallpox.—For the week ended May 23, 1925, 35 States reported 684 cases of smallpox. Last year, for the corresponding week, they reported 1,134 cases. One hundred and three cities reported smallpox for the week as follows: 1925, 329 cases; 1924, 408 cases; estimated expectancy, 118 cases. These cities reported 18 deaths from smallpox for the week this year.

Typhoid fever.—Three hundred and fifty-two cases of typhoid fever were reported for the week ended May 23, 1925, by 34 States. For the corresponding week of 1924 the same States reported 266 cases. One hundred and three cities reported 102 cases of typhoid fever for the week this year, and 78 cases for the corresponding week last year. The estimated expectancy for these cities was 66 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 103 cities, as follows: 1925, 767 deaths; 1924, 681 deaths.

City reports for week ended May 23, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine.									
Portland	73,129	2	1	0	0	0	0	13	3
New Hampshire:									
Concord	22,408	0	0	0	0	0	0	0	0
Manchester	81,383		1	1		1	1	0	2
Vermont:									
Barre	[1] 10,008	0	0	0	0	0	0	0	0
Burlington	23,613	1	1	2	0	0	3	9	4
Massachusetts.									
Boston	770,400		54	31	4	1	264		25
Fall River	120,912	9	3	1	0	0	3	2	4
Springfield	144,227	1	3	5	0	0	4	6	1
Worcester	191,927	13	4	4	0	0	47	0	2
Rhode Island:									
Pawtucket	68,799	3	1	0	0	0	1	0	2
Providence	242,378	0	11	1	1	0	4	0	3
Connecticut									
Bridgeport	[1] 143,555	0	4	3	1	0	13	0	
Hartford	[1] 138,036	0	6	5	0	1	5	1	4
New Haven	172,967	3	4	1	0	0	82	0	2

[1] Population Jan. 1, 1920.

City reports for week ended May 23, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases, reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
MIDDLE ATLANTIC									
New York.									
Buffalo	536, 718	13	12	12	6	0	289	2	12
New York	5, 927, 625	214	257	335	12	16	268	0	169
Rochester	317, 867	2	6	4	0	0	58	13	8
Syracuse	184, 511	17	7	4	0	0	19	17	5
New Jersey.									
Camden	124, 157	3	4	8	0	0	42	0	0
Newark	438, 699	58	15	12	1	0	74	7	13
Trenton	127, 390	5	4	1	0	0	1	0	2
Pennsylvania.									
Philadelphia	1, 922, 788	6	62	14	-------	3	63	3	42
Pittsburgh	613, 442	45	21	10	-------	1	244	6	33
Reading	110, 917	7	2	1	-------	1	162	5	0
Scranton	140, 636	1	3	3	0	0	0	0	7
EAST NORTH CENTRAL									
Ohio									
Cincinnati	406, 312	14	7	4	-------	1	1	2	9
Cleveland	888, 519	95	20	43	-------	4	17	6	16
Columbus	261, 082	5	3	3	0	0	12	1	2
Toledo	268, 338	17	3	7	0	0	125	2	2
Indiana									
Fort Wayne	93, 573	7	2	1	0	0	7	0	3
Indianapolis	342, 718	42	6	2	-------	1	24	6	8
South Bend	76, 709	4	1	1	0	0	4	0	0
Terre Haute	68, 939	4	0	2	-------	1	19	0	1
Illinois.									
Chicago	2, 886, 121	64	102	54	11	3	638	19	64
Cicero	55, 968	-------	2	-------	-------	-------	-------	-------	-------
Springfield	61, 833	7	1	0	3	2	28	29	1
Michigan									
Detroit	995, 668	78	46	22	7	3	30	24	32
Flint	117, 968	8	4	0	0	0	22	3	5
Grand Rapids	145, 947	6	2	3	-------	1	140	1	0
Wisconsin.									
Madison	42, 519	2	1	0	0	-------	3	12	-------
Milwaukee	484, 595	53	12	10	0	0	261	41	24
Racine	64, 393	8	1	0	0	0	69	24	1
Superior	[1] 39, 671	1	1	0	0	0	0	0	1
WEST NORTH CENTRAL									
Minnesota.									
Duluth	106, 289	4	2	0	-------	2	0	1	1
Minneapolis	409, 125	45	15	42	-------	4	50	2	4
St. Paul	241, 891	43	15	18	0	0	9	14	12
Iowa:									
Sioux City	79, 662	27	1	0	0	-------	0	6	-------
Waterloo	39, 667	2	0	0	0	-------	2	0	-------
Missouri:									
Kansas City	351, 819	20	6	3	2	2	19	22	13
St. Joseph	78, 232	4	1	0	0	0	0	2	1
St Louis	803, 853	42	40	50	0	0	32	8	-------
North Dakota.									
Fargo	24, 841	1	0	0	0	0	0	24	0
Grand Forks	14, 547	10	0	0	0	-------	0	0	-------
South Dakota:									
Aberdeen	15, 829	0	0	0	0	-------	0	0	-------
Sioux Falls	29, 206	0	1	2	0	-------	0	0	-------
Nebraska:									
Lincoln	58, 761	7	1	1	0	0	0	3	0
Omaha	204, 382	6	3	2	0	0	1	1	4
Kansas:									
Topeka	52, 555	7	1	0	0	0	3	82	1
Wichita	79, 261	24	1	4	0	0	0	2	0

[1] Population Jan. 1, 1925.

City reports for week ended May 23, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC									
Delaware									
Wilmington	117,728	1	1	3	0	0	19	1	2
Maryland									
Baltimore	773,580	95	18	22	10	2	12	51	34
Cumberland	32,361	0	1	0	0	0	0	0	0
Frederick	11,301	0	0	0	0	0	0	0	0
District of Columbia:									
Washington	[1] 437,571	11	10	11	0	0	35	0	5
Virginia:									
Lynchburg	30,277	3	0	0	0	0	2	14	1
Norfolk	159,089	15	1	0	0	0	1	44	3
Richmond	181,044	3	1	2	0	0	28	4	4
Roanoke	55,502	5	1	1	0	0	8	0	1
West Virginia:									
Charleston	45,597	1	0	0	0	0	34	0	2
Huntington	57,918	0	0	0	0		0	0	
Wheeling	[1] 56,208	3	1	0	0	0	18	0	3
North Carolina:									
Raleigh	29,171	10	1	0	0	0	0	0	2
Wilmington	35,719	0	0	0	0	0	0	3	1
Winston-Salem	56,230	13	0	1	0	0	2	2	3
South Carolina:									
Charleston	71,245	0	0	0	0	0	0	0	1
Columbia	39,688	0	1	1	0		0	8	
Greenville	25,789	1	0	0	0	0	0	0	0
Georgia:									
Atlanta	222,963	13	1	2	24	1	0	7	0
Brunswick	15,937	0	0	0	0	0	0	1	0
Savannah	89,448	0	0	0	6	0	1	4	2
Florida:									
St. Petersburg	24,403	0	0	0	0	0	0	0	1
Tampa	56,050		1	0	0	0	1		1
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	0	1	1		1	0	0	2
Louisville	257,671	4	3	3	2	1	1	1	5
Tennessee:									
Memphis	170,067	8	2	0		1	9	1	7
Nashville	121,128	1	1	0		6	43	1	2
Alabama:									
Birmingham	195,901	8	1	3		3	5	2	7
Mobile	63,858	0	1	0		3	0	0	1
Montgomery	45,383	2	0	0	1	0	1	3	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	1	1	0	0		0	1	
Little Rock	70,916	2	1	1	0	0	3	0	0
Louisiana:									
New Orleans	404,575	8	7	4	5	4	0	0	6
Shreveport	54,590	1	0	0	0	0	0	0	1
Oklahoma:									
Oklahoma	101,150	0	1	0	0	0	0	0	3
Texas:									
Dallas	177,274	16	3	1	0	0	0	1	3
Galveston	46,877	0	0	0	0	0	0	0	0
Houston	154,970		3						
San Antonio	184,727	3	0	0	0	0	2	0	4
MOUNTAIN									
Montana:									
Billings	16,927	2	0	0	0	0	6	18	0
Great Falls	27,787	1	1	2	0	0	3	7	0
Helena	[1] 12,037		0	0	0	0	0	0	0
Missoula	[1] 12,668	0	1	0	0	0	1	0	2
Idaho:									
Boise	22,806	2	1	1	0	0	1	0	0

[1] Population Jan. 1, 1925.

City reports for week ended May 23, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
MOUNTAIN—continued									
Colorado									
Denver	272,031	13	10	5	-------	1	8	38	12
Pueblo	43,519	0	1	1	0	1	0	0	0
New Mexico									
Albuquerque	16,648	0	1	0	0	0	1	6	0
Arizona:									
Phoenix	33,899	0	0	0	0	0	1	0	0
Utah:									
Salt Lake City	126,241	29	3	5	0	0	0	36	3
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	1
PACIFIC									
Washington:									
Seattle	[1] 315,685	53	5	1	0	-------	2	36	-------
Spokane	104,573	0	2	5	0	-------	0	0	-------
Tacoma	101,731	4	1	1	0	0	0	2	2
California:									
Los Angeles	666,853	41	34	35	13	4	32	22	23
Sacramento	69,950	3	2	1	1	1	0	1	2
San Francisco	539,038	36	24	14	5	1	11	44	6

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	1	5	0	0	0	0	0	0	0	2	24
New Hampshire:											
Concord	1	0	0	0	0	1	0	0	0	0	10
Manchester	1	5	0	0	0	0	0	0	0	-------	23
Vermont:											
Barre	1	0	0	0	0	1	0	0	0	0	3
Burlington	1	0	0	0	0	0	0	0	0	0	12
Massachusetts:											
Boston	49	67	1	0	0	16	2	5	1	-------	232
Fall River	3	4	0	0	0	4	1	1	0	0	26
Springfield	5	17	0	0	0	1	0	0	0	5	37
Worcester	7	12	0	0	0	3	0	1	0	0	35
Rhode Island:											
Pawtucket	1	3	0	0	0	0	0	0	0	0	12
Providence	10	8	0	0	0	4	0	0	0	0	59
Connecticut:											
Bridgeport	5	11	0	0	0	0	0	0	0	0	26
Hartford	3	9	0	0	0	2	0	1	0	10	34
New Haven	4	5	0	0	0	4	0	2	0	34	42
MIDDLE ATLANTIC											
New York:											
Buffalo	18	24	0	0	0	9	1	1	0	19	12
New York	196	285	0	0	0	[2] 105	11	30	2	158	1,41
Rochester	12	57	1	0	0	4	0	1	1	14	84
Syracuse	11	3	0	0	0	3	0	0	0	8	57
New Jersey:											
Camden	3	9	0	3	2	1	0	0	0	1	27
Newark	18	25	0	0	0	9	1	0	0	58	105
Trenton	2	2	0	0	0	2	0	1	0	0	33
Pennsylvania:											
Philadelphia	71	21	0	0	2	43	5	2	3	17	518
Pittsburgh	23	88	0	0	0	12	1	2	0	16	179
Reading	2	10	0	0	0	1	0	0	0	11	35
Scranton	2	3	0	0	0	1	0	0	0	2	-------

[1] Population Jan. 1, 1920.

[2] Pulmonary tuberculosis only.

City reports for week ended May 23, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	10	17	2	0	0	14	1	0	1	4	124
Cleveland	19	16	1	1	0	6	2	2	0	55	184
Columbus	5	25	2	16	0	4	0	0	0	13	67
Toledo	14	11	3	1	0	4	0	0	0	37	57
Indiana:											
Fort Wayne	2	6	3	1	0	3	0	0	1	2	28
Indianapolis	14	8	6	4	0	4	1	0	0	20	85
South Bend	3	16	0	2	0	0	0	0	0	0	13
Terre Haute	3	8	0	10	0	1	0	0	0	0	21
Illinois:											
Chicago	68	225	2	8	1	53	3	3	1	98	659
Cicero	1	-------	0	-------	-------	-------	0	-------	-------	-------	-------
Springfield	2	0	1	0	0	0	1	0	0	2	16
Michigan:											
Detroit	71	127	10	0	0	16	3	2	2	122	267
Flint	5	12	2	5	0	0	1	0	0	10	20
Grand Rapids	6	66	1	0	0	1	1	0	0	1	44
Wisconsin:											
Madison	2	1	1	0	-------	0	0	0	-------	15	-------
Milwaukee	26	13	2	46	12	10	1	0	0	25	145
Racine	5	5	1	1	0	2	0	0	0	0	10
Superior	2	12	2	1	0	1	0	0	0	0	11
WEST NORTH CENTRAL											
Minnesota:											
Duluth	4	13	1	0	0	0	0	0	0	1	17
Minneapolis	28	112	7	3	0	7	0	1	0	3	96
St. Paul	18	16	5	2	1	3	0	1	0	28	80
Iowa:											
Sioux City	3	1	1	1	-------	-------	0	0	-------	0	-------
Waterloo	2	0	1	9	-------	-------	0	0	-------	8	-------
Missouri:											
Kansas City	8	32	3	0	0	8	1	0	0	19	94
St. Joseph	2	4	1	0	0	4	0	0	0	0	30
St. Louis	29	79	1	4	0	12	2	0	0	17	217
North Dakota:											
Fargo	1	1	0	0	0	0	0	0	0	3	5
Grand Forks	1	0	1	0	-------	-------	0	0	-------	0	-------
South Dakota:											
Aberdeen	1	1	0	0	-------	-------	0	0	-------	3	-------
Sioux Falls	1	3	1	0	-------	-------	0	0	-------	0	-------
Nebraska:											
Lincoln	2	0	1	0	0	0	0	0	0	14	20
Omaha	5	3	3	14	0	2	0	0	0	2	42
Kansas:											
Topeka	1	2	0	0	0	1	0	0	0	3	13
Wichita	2	2	3	0	0	0	0	0	0	19	22
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	7	0	0	0	0	0	0	0	3	27
Maryland:											
Baltimore	25	34	0	0	0	22	3	3	0	127	230
Cumberland	1	0	0	0	0	0	0	0	0	0	12
Frederick	1	1	0	0	0	0	0	0	0	0	0
Dist. of Columbia:											
Washington	16	21	2	1	0	10	2	0	1	19	106
Virginia:											
Lynchburg	1	0	0	3	0	1	0	2	0	11	7
Norfolk	1	1	0	0	0	1	1	0	0	27	-------
Richmond	3	0	0	0	0	6	0	2	0	1	60
Roanoke	1	1	0	0	0	1	0	0	0	4	18
West Virginia:											
Charleston	1	1	1	0	0	3	0	0	0	1	23
Huntington	0	3	0	10	-------	-------	0	0	-------	0	-------
Wheeling	2	2	0	0	0	0	0	1	1	0	22

City reports for week ended May 23, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
SOUTH ATLANTIC—continued											
North Carolina:											
Raleigh	0	0	0	1	0	1	0	0	0	0	16
Wilmington	0	0	0	2	0	1	0	0	0	3	9
Winston-Salem	1	0	2	17	0	0	0	1	0	10	22
South Carolina:											
Charleston	0	0	1	0	0	3	0	1	0	1	26
Columbia	0	0	0	1			1	3		0	
Greenville	0	0	0	7	0	0	0	1	0	1	2
Georgia:											
Atlanta	4	2	6	0	0	5	0	5	1	14	83
Brunswick	0	0	1	0	0	2	0	0	0	0	7
Savannah	1	1	0	0	0	4	1	0	0	2	39
Florida:											
St. Petersburg	0	0	0	0	0	0	0	0	0	0	10
Tampa	0	1	0	0	0	2	1	0	0		31
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	1	0	0	0	5	1	0	0	0	21
Louisville	3	12	1	4	0	9	2	1	0	6	84
Tennessee:											
Memphis	4	6	2	15	0	6	1	5	0	23	70
Nashville	2	5	1	11	0	3	1	2	0	1	48
Alabama:											
Birmingham	1	19	1	46	0	8	2	2	0	4	75
Mobile	0	0	1	1	0	1	0	1	0	0	20
Montgomery	0	0	1	0	0	0	1	2	0	0	15
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	0	0	0			0	0		4	
Little Rock	1	0	1	0	0	1	0	2	0	0	
Louisiana:											
New Orleans	2	9	3	1	0	15	3	6	3	77	165
Shreveport	0	0	0	2	0	0	0	0	0	0	20
Oklahoma:											
Oklahoma	2	0	5	0	0	0	1	0	0	0	23
Texas:											
Dallas	2	0	3	16	0	2	0	2	1	8	44
Galveston	0	0	0	2	0	1	1	0	0	0	25
Houston	1		1				0				
San Antonio	1	0	0	1	0	5	1	0	0	0	46
MOUNTAIN											
Montana:											
Billings	1	0	0	0	0	0	0	0	0	0	2
Great Falls	1	14	2	0	0	0	0	0	0	4	15
Helena	1	0	1	0	0	0	0	1	0		4
Missoula	0	2	1	0	0	0	0	0	0	1	5
Idaho:											
Boise	1	0	1	2	0	0	0	0	0	4	6
Colorado:											
Denver	11	14	1	0	0	10	0	0	0	14	78
Pueblo	1	0	0	0	0	0	0	0	0	1	16
New Mexico:											
Albuquerque	1	0	0	0	0	3	0	0	0	0	9
Arizona:											
Phoenix	0	1	0	0	0	7	0	0	0	2	19
Utah:											
Salt Lake City	2	4	0	0	0	2	1	1	0	9	30
Nevada:											
Reno	1	0	0	1	0	0	0	0	0	0	5
PACIFIC											
Washington:											
Seattle	7	9	2	25			1	0		92	
Spokane	3	0	6	0			0	0		25	
Tacoma	2	6	1	8	0	0	0	0	0	1	24
California:											
Los Angeles	13	27	1	29	0	25	1	1	0	76	215
Sacramento	1	1	0	0	0	1	1	0	0	8	21
San Francisco	14	13	1	2	0	17	1	1	0	44	136

City reports for week ended May 23, 1925—Continued

Division, State and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	Cases	Deaths
NEW ENGLAND											
Massachusetts:											
Boston	0	1	0	0	0	0	0	0	0	0	0
Connecticut:											
New Haven	0	0	0	0	0	0	0	0	0	1	0
MIDDLE ATLANTIC											
New York:											
Buffalo	0	0	1	1	0	0	0	0	0	0	0
New York	2	2	9	3	0	0	1	0	0	0	0
Rochester	0	0	0	2	0	0	0	0	0	0	0
Pennsylvania:											
Pittsburgh	1	0	0	0	0	0	0	0	1	0	0
EAST NORTH CENTRAL											
Indiana:											
Terre Haute	1	1	0	0	0	0	0	0	0	0	0
Illinois:											
Chicago	1	0	0	0	0	0	1	0	0	0	0
Michigan:											
Detroit	3	0	0	1	0	0	0	1	0	0	0
Wisconsin:											
Milwaukee	0	0	1	1	0	0	1	0	0	0	0
WEST NORTH CENTRAL											
Missouri:											
Kansas City	0	0	0	0	1	1	0	0	0	0	0
SOUTH ATLANTIC											
Maryland:											
Baltimore	2	2	1	0	0	0	0	1	1	0	0
District of Columbia:											
Washington	0	0	1	1	0	0	0	0	0	0	0
Virginia:											
Richmond	0	1	0	0	0	1	0	0	0	0	0
North Carolina:											
Raleigh	1	0	0	0	0	0	0	0	0	0	0
South Carolina:											
Greenville	0	0	0	0	0	1	0	0	0	0	0
Georgia:											
Atlanta	0	0	0	0	0	1	0	0	0	0	0
Florida:											
Tampa	0	0	0	0	0	1	0	0	0	0	0
EAST SOUTH CENTRAL											
Tennessee:											
Memphis	0	0	0	0	1	1	0	0	0	0	0
Alabama:											
Mobile	0	0	0	0	1	0	0	0	0	0	0
Montgomery	0	0	0	0	1	0	0	0	0	0	0
WEST SOUTH CENTRAL											
Arkansas:											
Little Rock	0	0	0	0	0	1	0	0	0	0	0
Louisiana:											
New Orleans	0	0	0	0	3	2	0	0	0	0	0
Shreveport	0	0	0	0	0	2	0	0	0	0	0
Texas:											
Dallas	0	0	0	0	1	0	0	0	0	0	0
Galveston	0	0	0	0	0	2	0	0	0	0	0
San Antonio	0	0	0	0	0	1	0	0	1	0	0
PACIFIC											
Washington:											
Spokane	2	....	0	....	0	....	0	0	....	0	....
Tacoma	3	1	0	0	0	0	0	0	0	0	0
California:											
Los Angeles	2	0	0	0	1	0	0	1	0	0	0
San Francisco	0	0	1	0	0	0	0	2	0	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended May 23, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000, and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, March 15 to May 23, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Mar 21	Mar 28	Apr 4	Apr 11	Apr 18	Apr. 25	May 2	May 9	May 16	May 23
105 cities	167	[2] 168	177	158	160	162	158	[2] 157	[3] 164	[4] 154
New England	147	119	171	166	129	144	127	100	154	127
Middle Atlantic	196	231	241	220	228	218	213	212	238	203
East North Central	134	112	93	96	110	113	110	113	110	[5] 108
West North Central	199	247	220	226	168	187	201	278	[6] 212	251
South Atlantic	136	95	81	73	102	108	104	104	85	87
East South Central	69	57	23	34	46	40	40	11	34	40
West South Central	97	121	83	107	74	79	70	65	56	[7] 32
Mountain	143	134	124	105	239	267	115	105	153	134
Pacific	249	[2] 179	374	171	168	165	206	[2] 123	[8] 138	165

MEASLES CASE RATES

	Mar 21	Mar 28	Apr 4	Apr 11	Apr 18	Apr. 25	May 2	May 9	May 16	May 23
105 cities	506	[2] 507	558	531	589	645	581	[2] 627	[3] 624	[4] 604
New England	725	755	957	1,011	917	1,217	1,004	984	1,188	1,051
Middle Atlantic	598	633	734	680	815	782	734	797	768	617
East North Central	775	798	736	710	742	901	761	890	854	[5] 953
West North Central	93	89	77	58	91	102	79	112	[6] 80	236
South Atlantic	189	136	209	207	256	295	305	240	329	327
East South Central	69	34	69	34	97	189	200	343	166	837
West South Central	42	9	88	51	65	37	28	32	14	[7] 27
Mountain	573	38	219	57	267	219	534	181	57	181
Pacific	189	[2] 151	209	241	154	203	162	[2] 95	[8] 178	131

SCARLET FEVER CASE RATES

	Mar 21	Mar 28	Apr 4	Apr 11	Apr 18	Apr. 25	May 2	May 9	May 16	May 23
105 cities	427	[2] 419	409	367	342	360	309	[2] 323	[3] 352	[4] 309
New England	544	604	534	529	350	407	430	415	358	350
Middle Atlantic	417	405	436	359	343	336	323	319	331	265
East North Central	498	483	442	422	403	433	324	366	399	[5] 416
West North Central	792	755	736	647	651	692	518	618	[6] 734	556
South Atlantic	146	167	175	152	167	175	132	106	165	146
East South Central	286	286	263	280	229	257	263	263	326	246
West South Central	134	102	51	88	60	121	111	88	74	[7] 22
Mountain	420	248	277	258	315	401	334	277	353	324
Pacific	218	[2] 222	191	174	145	148	125	[2] 151	[8] 197	162

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923

[2] Spokane, Wash., not included. Report not received at time of going to press.

[3] Sioux Falls, S. Dak., and Tacoma, Wash., not included.

[4] Cicero, Ill., and Houston, Tex., not included.

[5] Cicero, Ill., not included.

[6] Sioux Falls, S. Dak., not included.

[7] Houston, Tex., not included.

[8] Tacoma, Wash., not included.

Summary of weekly reports from cities, March 15 to May 23, 1925—Annual rates per 100,000 population—Continued

SMALLPOX CASE RATES

	Week ended—									
	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23
105 cities	63	[2] 58	57	51	48	62	50	[2] 46	[3] 46	[4] 60
New England	0	0	12	2	0	2	0	2	0	0
Middle Atlantic	8	7	21	10	18	12	8	6	7	2
East North Central	32	33	24	22	27	39	30	44	56	[5] 71
West North Central	102	135	87	97	85	89	75	60	[6] 80	68
South Atlantic	57	67	49	43	53	79	63	45	37	65
East South Central	646	423	42	572	395	457	435	377	189	440
West South Central	107	107	46	51	14	42	32	28	37	[7] 118
Mountain	67	19	19	19	10	29	10	48	20	29
Pacific	212	[2] 191	255	148	162	264	206	[2] 176	[8] 191	186

TYPHOID FEVER CASE RATES

	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23
105 cities	12	[2] 11	9	10	12	16	18	[2] 14	[3] 13	[4] 19
New England	30	12	5	2	7	17	10	5	12	25
Middle Atlantic	8	7	4	9	11	14	22	13	10	19
East North Central	7	3	4	6	4	7	4	9	6	[5] 5
West North Central	8	6	2	2	2	6	12	2	[6] 0	4
South Atlantic	22	12	30	20	12	14	28	28	26	39
East South Central	46	57	17	17	34	80	46	46	63	74
West South Central	23	42	32	37	56	51	51	46	79	[7] 54
Mountain	0	0	0	19	38	29	0	0	0	19
Pacific	0	[2] 28	20	9	12	23	17	[2] 9	[8] 3	6

INFLUENZA DEATH RATES

	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23
105 cities	42	33	34	27	27	30	22	15	[6] 14	[4] 14
New England	30	30	35	32	27	30	20	10	7	5
Middle Atlantic	29	22	21	16	24	17	14	10	12	11
East North Central	49	40	38	27	24	33	23	16	11	[5] 12
West North Central	42	46	39	37	50	48	31	11	[6] 11	18
South Atlantic	53	12	28	26	12	43	26	24	10	6
East South Central	120	86	69	74	80	86	51	51	80	86
West South Central	76	36	36	46	36	25	31	15	20	[7] 24
Mountain	48	38	181	86	38	76	48	19	57	19
Pacific	12	53	29	12	29	12	12	16	12	25

PNEUMONIA DEATH RATES

	Mar. 21	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23
105 cities	217	206	204	201	192	203	167	151	[6] 127	[4] 129
New England	211	219	251	211	206	186	149	161	134	119
Middle Atlantic	217	199	215	190	204	223	206	185	143	144
East North Central	222	214	182	190	190	211	148	130	125	[5] 125
West North Central	173	166	193	228	171	136	72	77	[6] 58	79
South Atlantic	290	252	234	238	232	191	195	156	136	134
East South Atlantic	286	269	269	343	206	286	194	160	166	137
West South Central	178	168	168	168	173	158	127	138	112	[7] 84
Mountain	172	200	162	267	210	219	124	124	162	172
Pacific	131	159	159	119	98	147	127	123	78	135

[2] Spokane, Wash., not included. Report not received at time of going to press.
[3] Sioux Falls, S. Dak., and Tacoma, Wash., not included.
[4] Cicero, Ill., and Houston, Tex., not included.
[5] Cicero, Ill., not included.
[6] Sioux Falls, S. Dak., not included.
[7] Houston, Tex., not included.
[8] Tacoma, Wash., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28, 898, 350	28, 140, 934
New England	12	12	2, 098, 746	2, 098, 746
Middle Atlantic	10	10	10, 304, 114	10, 304, 114
East North Central	17	17	7, 032, 535	7, 032, 535
West North Central	14	11	2, 515, 330	2, 381, 454
South Atlantic	22	22	2, 566, 901	2, 566, 901
East South Central	7	7	911, 885	911, 885
West South Central	8	6	1, 124, 564	1, 023, 013
Mountain	9	9	546, 445	546, 445
Pacific	6	3	1, 797, 830	1, 275, 841

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FOREIGN AND INSULAR

ESTHONIA

Communicable diseases—March, 1925.—During the month of March, 1925, communicable diseases were reported in the Republic of Esthonia as follows: Cerebrospinal meningitis, 1; diphtheria, 40; scarlet fever, 35; tuberculosis, 207; typhoid fever, 69; typhus fever, 2. Population, 1,107,059.

ITALY

Malta fever—Catania—Syracuse Province—April 20–May 3, 1925.—Malta fever has been reported in Italy as follows: Catania—April 27–May 3, 1925: One case; Province of Syracuse, April 20–May 3, 1925: Cases, 3.

LATVIA

Communicable diseases – March, 1925—During the month of March, 1925, communicable diseases were notified in the Republic of Latvia as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	2	Rabies	3
Chicken pox	1	Scarlet fever	262
Diphtheria	69	Smallpox	3
Dysentery	3	Typhoid fever	78
Measles	435	Typhus fever	4
Mumps (epidemic)	204	Whooping cough	122
Paratyphoid	1		

Population, estimated, 2,000,000.

MEXICO

Typhus fever—Tampico—May 29, 1925.—A case of typhus fever was reported at Tampico, Mexico, May 29, 1925.

PANAMA CANAL

Communicable diseases—April, 1925.—During the month of April, 1925, communicable diseases were notified in the Canal Zone and at Colon and Panama as follows:

Disease	Canal Zone		Colon		Panama		Non-resident		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chicken pox	5		1		31	1	3		40	1
Diphtheria					6	2			6	2
Dysentery							1		1	
Hookworn disease	1		8		44		24		77	
Leprosy		1							1	
Malaria	33	1			2		24	2	59	3
Measles					4		14		18	
Meningitis					3	3			3	3
Mumps	2						5		7	
Pneumonia[1]		3		2		12		6		23
Tuberculosis[1]		3		9		9		2		23
Typhoid fever							1		1	

[1] As many cases are not reported until death occurs, this report shows only the number of deaths.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended June 12, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Mar. 29-Apr. 11, 1925. Cases, 5,956, deaths, 3,926.
Calcutta	Apr. 12-18	55	53	Mar 22-28, 1925: Cases, 32; deaths, 28. Delayed report.
Madras	Apr. 26-May 2	1	1	
Rangoon	Apr. 12-25	6	5	
Siam:				
Bangkok	Mar 22-Apr 4	3	2	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Brazil:				
Bahia	Apr. 19-May 2	2	2	
Ecuador:				
Guayquil	Apr 16-30	3	2	Rats taken: 10,583; found infected, 43.
Do	May 1-15	1	2	Rats taken: 10,038; found infected, 27.
Egypt				Apr. 30-May 6, 1925: Cases, 4 Jan 1-May 6, 1925 Cases, 28; deaths, 18 Corresponding period, 1924—cases, 203.
Province—				
Assiout	May 2	1	1	Bubonic
Fayoum	do	1	1	Septicemic.
Minia	May 5	2	2	Bubonic
India				Mar. 29-Apr. 4, 1925: Cases, 10,904, deaths, 9,465.
Bombay	Apr. 12-18	10	6	
Rangoon	Apr. 12-25	58	51	
Java:				
East Java—				
Soerabaya	Mar 26-Apr. 1	3	4	
West Java—				
Batavia	Apr 11-17	12	12	Province.
Siam:				
Bangkok	Mar 22-Apr. 4	7	7	
Straits Settlements.				
Singapore	Apr 12-18	6	7	

SMALLPOX

Place	Date	Cases	Deaths	Remarks
China:				
Amoy	Apr. 19-May 2		10	Prevalent in surrounding district
Chungking	do			Widely diffused.
Foochow	Apr. 19-25			Present.
Manchuria—				
Harbin	Apr 29-May 5	1		
Egypt:				
Alexandria	Apr 23-29	1		
Great Britain				
England and Wales	Apr. 18-May 9	508		
Newcastle-on-Tyne	May 10-16	2		
India				Mar. 29-Apr. 11, 1925: Cases, 13,760, deaths, 3,242.
Bombay	Apr. 12-18	40	21	
Calcutta	do	285	243	Mar 22-28, 1925. Cases, 505; deaths, 377. Delayed report.
Karachi	Apr 26-May 2	9	1	
Madras	do	46	22	
Rangoon	Apr. 12-25	147	79	
Indo-China:				
Saigon	Apr. 5-11	7	1	
Japan				
Nagasaki	May 4-10	3		
Java:				
East Java—				
Soerabaya	Mar. 26-Apr. 1	31	2	
Latvia				Mar. 1-31, 1925: Cases, 3.
Malta				Apr. 16-30, 1925. Cases, 3.

[1] From medical officers of the Public Health Service, American consuls and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended June 12, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico				
Guadalajara	May 19-25		1	
Mexico City	May 3-9	4		Including municipalities in Federal District.
San Luis Potosi	May 17-23		1	
Poland				Feb. 22-28, 1925: Cases, 2.
Siam:				
Bangkok	Mar. 22-Apr. 4	12	3	10 of these imported.
Straits Settlements:				
Singapore	Apr. 12-18	1		
Union of South Africa				
Orange Free State	do			Outbreaks.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Bulgaria				
Sofia	Apr. 30-May 6	1		
Egypt:				
Alexandria	Apr. 23-29	2	2	
Cairo	Feb. 26-Mar. 4	3	2	
Esthonia				Mar. 1-31, 1925. Cases, 2.
Latvia				Mar. 1-31, 1925 Cases, 4
Mexico:				
Mexico City	May 3-9	8		Including municipalities in Federal District.
Tampico	May 29	1		
Poland				Feb 22-28, 1925: Cases, 147; deaths, 15.

Reports Received from December 27, 1924, to June 5, 1925[1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Dec. 27, 1924. Cases, 14; deaths, 13. Dec 28, 1924-Jan. 24, 1925: Cases, 24, deaths, 17.
Colombo	Nov 16-22	1		
Do	Jan 11-24	2	2	
India				Oct 19, 1924, to Jan 3, 1925: Cases, 27,164, deaths, 16,228. Jan. 4-Mar 29, 1925. Cases, 26,127; deaths, 15,462
Bombay	Nov. 23-Dec. 20	4	4	
Do	Jan. 18-24	1	1	
Calcutta	Oct. 26-Jan 3	59	51	
Do	Jan. 4-Mar. 21	205	164	
Do	Mar. 29-Apr. 11	101	94	Reported to be epidemic May 9, 1925.
Madras	Nov 16-Jan. 3	69	40	
Do	Jan. 4-Mar. 7	139	99	
Do	Apr 5-25	4	2	
Rangoon	Nov. 9-Dec. 20	9	2	
Do	Jan. 4-Apr. 11	20	13	
Indo-China				Aug. 1-Sept. 30, 1924. Cases, 14; deaths, 10. Dec. 1-31, 1924: Cases, 5; deaths, 2.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept. 30	6	5	
Do	Dec. 1-31	1		
Cochin-China	Aug. 1-Dec. 31	10	5	
Saigon	Nov. 30-Dec 6	1		
Do	Mar. 15-21	1	1	
Tonkin	Dec. 1-31	1	1	
Siam:				
Bangkok	Nov. 9-29	4	2	
Do	Jan. 18-Mar. 21	8	5	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 5, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 2-Jan. 3	30	13	
Do	Jan. 18-24	3	1	
Brazil:				
Bahia	Jan 4-Apr. 18	11	7	
Santos	Year, 1924	2		Bubonic.
British East Africa				
Tanganyika Territory	Nov. 23-Dec. 27	17	10	
Do	Jan 18-Mar 14	18	12	
Uganda	Aug.-Dec., 1924	279	243	
Do	Jan. 1-31	29	28	
Canary Islands.				
Las Palmas	Jan. 21-23	2		Stated to be endemic
Do	Feb. 4	1		Stated to have been infected with plague Sept. 30, 1924.
Do	Mar. 26	1	1	
Realejo Alto	Dec. 19	3	1	Vicinity of Santa Cruz de Teneriffe
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.
Celebes:				
Macassar	Oct 29			Endemic.
Ceylon				
Colombo	Nov. 9-Jan 3	12	9	
Do	Jan 4 Apr 14	21	21	
China				
Foochow	Dec 28-Jan 3			Present.
Nanking	Nov 23 Mar 7			Do.
Shing Hsien	October, 1924		700	
Ecuador				Mar 16-Apr 15, 1925 Cases, 10; deaths, 4
Chimborazo Province—				
Alausi District	Jan. 14		14	At 2 localities on Guayaquil & Quito Ry
Daule	Mar. 16-31	1		
Guayaquil	Nov 16-Dec 31	9	3	Rats taken, 27,004, found infected, 92
Do	Jan. 1-Apr 15	68	20	Rats taken, 78,396; found infected, 325.
Naranjito	Feb 16-Mar 15	1		
Yaguachi	Feb 1-Mar. 15	2	1	
Egypt				Year 1924: Cases, 373 Jan 1-Apr. 20, 1925. Cases, 24; deaths, 14.
City—				
Suez	Apr 2-22	2	2	
Province—				
Beni-Souef	Jan 18	1	1	
Dakhalia	Jan. 7	1	1	
Fayoum	Apr. 5-14	3	2	
Girgeh	Jan 9 Apr 5	2	2	
Kalioubiah	Jan 5-Apr. 22	5	2	
Menoufieh	Jan 1-Apr. 9	8	4	
Minia	Apr. 1-5	2		
Gold Coast				September - December, 1924: Deaths, 52.
Greece:				
Patras	Apr. 5	1		
Hawaii:				
Honokaa	Nov. 4	1		Plague-infected rodents found Dec. 9, 1924, Jan 15, Apr. 28 and 30, 1925 Vicinity Pacific Sugar Mill, Island of Hawaii.
India				Oct 19, 1924, to Jan. 3, 1925: Cases, 28,154; deaths, 21,505. Jan. 4-Mar 28, 1925: Cases, 57,672, deaths, 48,562.
Bombay	Nov 22-Jan. 3	4	3	
Do	Jan 4-17	2	2	
Do	Feb 8-Apr. 4	56	47	
Calcutta	Jan. 18-24	1	1	
Karachi	Nov 30-Dec 6	2	1	
Do	Jan. 4-Feb. 21	12	11	
Do	Mar 29-Apr 25	6	7	
Madras Presidency	Nov 23-Jan. 3	685	487	
Do	Jan. 4-24	658	511	
Do	Mar 8-14	80	48	
Do	Apr. 19-25	27	16	
Rangoon	Oct 26-Jan. 3	26	25	
Do	Jan. 4-Apr. 11	187	164	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 5, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China				Aug 1-Sept. 30, 1924: Cases, 25; deaths, 20. Dec 1-31, 1924: Cases, 11, deaths, 11. Corresponding month, 1923: Cases, 15; deaths, 5.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Do	Dec. 1-31	5	5	
Cambodia	Aug 1-Sept. 30	18	15	
Do	Dec 1-31	6	6	
Cochin China	do	3	1	
Saigon	Dec 25-31	1	1	Including 100 square kilometers of surrounding territory.
Do	Jan 11-17	2	1	Do
Iraq	June 29-Jan. 3	20	14	
Bagdad	Mar 22-28	1	1	
Japan	Aug 10-Dec 6	19		
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri. Epidemic.
Pare	Nov 29			Do.
Samarang	Mar 22-28	2	2	
Sidoardja	Jan 2			Declared epidemic, Province of Soerabaya
Soerabaya	Nov. 16-Dec 31	71	72	
Do	Jan 15-Mar 25	25	22	Mar 29-Apr. 4, 1925: 2 plague rats found
Soerakarta	Feb. 20			Epidemic plague in one locality.
West Java—				
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov. 18-Dec. 22		80	
Do	Jan 1-14		44	
Do	Feb. 5-11		13	
Do	Feb 19-25		13	
Do	Mar 5-11		14	
Pasoeroean	Dec. 27			Province. Epidemic in one locality.
Pekalongan	Oct 14-Nov. 3		29	Pekalongan Province.
Do	Nov 18-Dec. 31		177	
Do	Jan 1-14		81	
Do	Feb. 5-11		36	
Do	Feb 19-25		38	
Do	Mar. 5-11		28	
Probalingga	Dec 27			Province. Epidemic.
Tegal	Oct 14-Dec. 31		26	
Do	Jan 1-14		37	Pekalongan Province.
Do	Feb 5-11		7	
Do	Feb 19-25		10	
Do	Mar 5-11		3	
Madagascar:				
Fort-Dauphin (port)	Nov. 1-Dec. 15	12	5	
Do	Feb 1-15	1	1	Bubonic.
Itasy Province	Nov 1-Dec 15	4	2	
Do	Feb. 1-Mar. 15	6	6	
Majunga (port)	Nov 1-30	1	1	
Moramanga Province				Nov. 1-Dec. 15, 1924: Cases, 49; deaths, 34. Jan 16-Mar. 15, 1925: Cases, 8; deaths, 8.
Tamatave (port)	Nov 1-30	1	1	
Tananarive Province				Oct 16-Dec 31, 1924. Cases, 298; deaths, 274
Do				Jan 1-Mar. 15: Cases, 456; deaths, 387.
Tananarive (town)	Mar. 1-15	3	3	
Mauritius Island				Year 1924: Cases, 161, deaths, 144.
District—				
Flacq	Dec 1-31	5	4	
Pamplemousses	do	1	1	
Plaines-Wilhems	January-December, 1924.	54	47	Not present March, April, May.
Port Louis	February-December, 1924.	101	92	
Mexico:				
Tampico	Apr. 6, 1925			Plague rat found in vicinity of Government wharves.
Morocco:				
Marrakech				Feb. 9, 1925: Present in native quarter of town. Stated to be pneumonic in form and of high mortality.
Nigeria				August-November, 1924: Cases, 387; deaths, 317.
Palestine:				
Jerusalem	Mar 3-9	1		
Peru:				
Callao	February, 1925	6	6	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 5, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan. 25-Mar. 21	7	6	
Siberia:				
Transbaikalia—				
Turga	October, 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Do	Jan. 4-Apr. 11	30	19	
Syria:				
Beirut	Jan. 11-Apr. 10	2		
Turkey:				
Constantinople	Jan. 9-15	5	5	
Union of South Africa	Nov. 22-Jan. 3	28	15	In Cape Province, Orange Free State, and Transvaal.
Do	Jan. 4-Apr. 4	55	23	Do.
On vessels:				
S. S. Conde				At Marseille, France, Nov. 8, 1924 Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec 31, 1924: Cases, 409. Jan. 1-20, 1925: Cases, 107.
Algiers	Jan. 1-Apr. 30	16		
Arabia:				
Aden	Jan. 25-Apr. 18	14	1	
Argentina:				
Buenos Aires	Mar 15-21	1		
Belgium	Jan. 1-Feb. 10	4		
Bolivia:				
La Paz	Nov 1-Dec. 21	20	11	
Do	Jan. 1-Mar. 31		12	
Brazil				
Pernambuco	Nov 9-Jan. 3	100	27	
Do	Jan. 4-Mar. 28	111	56	
Porto Alegre	Apr. 12-18		1	
British East Africa:				
Kenya—				
Mombasa	Jan 18-Feb. 28	66	14	
Do	Mar 8-28	29	7	
Tanganyika Territory	Feb. 15-21	1		
Uganda—				
Entebbe	Oct. 1-31	4		
British South Africa:				
Northern Rhodesia	Oct. 28-Dec. 15	57	2	
Do	Jan. 27-Feb. 2	3		Natives.
Do	Mar 17-Apr 14	9		
Southern Rhodesia	Jan 29-Mar. 25	4	1	
Bulgaria:				
Sofia	Mar. 12-18	1		Varioloid.
Canada:				
Alberta—				
Calgary	Mar 15-21	1		
British Columbia—				
Ocean Falls	Mar. 7-27	6		Very mild.
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4 Apr 12	305		
Do	Apr. 19-May 17	16		
Victoria	Jan. 18-Apr 25	11		
Manitoba—				
Winnipeg	Dec 7-Jan 3	14		
Do	Jan. 4-Feb. 27	30		
Do	Apr. 5-11	1		
New Brunswick—				
Northumberland	Feb. 8-14	1		County.
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33. Dec. 28, 1924, to Apr. 25, 1925: Cases, 69; deaths, 1.
Hamilton	Jan 24-30	1		
Kingston	Apr 12-18	1		
Ottawa	Mar 29-Apr. 4	1		
Do	May 3-9	2		
Welland	Mar. 22-Apr 25	7		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 5, 1925—Continued

SMALLPOX—Continued.

Place	Date	Cases	Deaths	Remarks
Ceylon				July 27-Nov. 29, 1924; Cases, 27; deaths, 1.
Colombo	Jan. 18-Feb 7	4		
Do	Mar 8-Apr. 18	17		
China.				
Amoy	Nov. 9-Feb. 21			Present.
Do	Feb 22-Apr. 18		19	
Antung	Nov 17-Dec. 28	5		
Do	Jan. 5-Feb 14	15	1	
Do	Mar 2-Apr. 5	9	1	
Do	Apr. 12-26	5		
Canton	Mar. 15-Apr. 18			Prevalent.
Chefoo	Mar. 15-21			Prevalent. No foreign cases.
Chungking	Mar 22-Apr. 18			Stated to be widely prevalent; less than in period in year 1924.
Foochow	Nov. 2-Apr 18			Present.
Hongkong	Nov 9-Jan. 3	6	2	
Do	Jan. 4-Feb 7	9	7	
Do	Feb. 15-Apr. 4	27	13	
Manchuria—				
Dairen	Jan 19-Apr. 26	18	3	
Harbin	Jan 15-Apr 21	6		
Nanking	Jan 4-Apr. 18			Pravalent.
Shanghai	Dec 7-27	1	2	
Do	Jan. 18-Mar 7		8	
Do	Apr. 12-25	2	1	
Chosen				
Seoul	Dec. 1-31	1		
Do	Mar. 1-31	2		
Colombia				
Buenaventura	Feb 15-Apr. 4	3		
Santa Marta	Mar. 15-28			Present in mild form in localities in vicinity
Cuba				
Santiago	Apr. 12-18	3	1	
Czechoslovakia				Apr-June, 1924 Cases, 1; occurring in Province of Moravia.
Dominican Republic:				
Puerta Plata	Mar. 8-21	3		
Dutch Guiana:				
Paramaribo	Apr. 20	1		
Ecuador				
Guayaquil	Nov 16-Dec. 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 31	10		
Do	Jan 8-28	8		
Do	Feb 26-Mar. 4	1		
Cairo	Jan 29-Feb. 4	1	1	
Esthonia				Dec. 1-31, 1924: Cases, 2.
France				July-December, 1924: Cases, 81.
Do	January, 1925	10		
Boulogne-Sur-Mer	Apr 1-30	1	1	
Dunkirk	Mar. 2-8	1		From vessel In quarantine.
St Malo	Feb. 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis
Germany				June 29-Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1-10	1		
Gibraltar	Dec. 8-14	1		
Do	May 4-10	2		
Gold Coast				July-December, 1924: Cases, 106; deaths, 1.
Great Britain.				
England and Wales	Nov. 23-Jan. 3	472		
Do	Jan. 4-Apr. 18	2,047		
Newcastle-on-Tyne	Jan. 18-Feb. 21	9		
Do	Mar. 1-May 9	5		
Greece				January-June, 1924: Cases, 170; deaths, 27.
Do				July-December, 1924: Cases, 38; deaths, 26.
Saloniki	Nov. 11-Dec. 22	3		
Do	Feb. 17-Mar. 2	4		
Haiti:				
Cape Haitien	Mar. 22-Apr. 2	6		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 5, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 12,561, deaths, 2,857. Jan. 4-Mar 28, 1925: Cases, 54,626; deaths, 12,491.
Bombay	Nov 2-Jan. 3	30	18	
Do	Jan 4-Apr. 4	601	307	
Calcutta	Oct 26-Jan 8	307	170	
Do	Jan 4-Mar 21	2,669	1,875	
Do	Mar. 29-Apr. 11	796	573	
Karachi	Nov 16-Jan. 3	16	2	
Do	Jan 4-Feb. 14	52	6	
Do	Feb. 22-Apr. 25	90	25	
Madras	Nov 16-Jan 3	122	48	
Do	Jan. 4-Mar 7	552	212	
Do	Mar. 15-Apr 25	553	224	
Rangoon	Oct. 26-Jan 3	86	28	
Do	Jan. 4-Feb. 7	287	49	
Do	Feb 15-Apr 11	1,121	225	
Indo-China				Aug. 1-Sept. 30, 1924. Cases, 223; deaths, 76 Dec 1-31, 1924; Cases, 485, deaths, 114.
Province—				
Anam	Aug 1-Sept 30	49	11	
Do	Dec. 1-31	167	26	
Cambodia	Aug 1-Sept 30	40	9	
Do	Dec. 1-31	30	13	
Cochin-China				Aug. 1-Sept. 30, 1924: Cases, 115; deaths, 49. Dec. 1-31, 1924: Cases, 50, deaths, 13.
Saigon	Nov 16-Jan. 3	17	5	Including 100 square kilometers of surrounding country.
Do	Jan. 4-Feb 21	32	8	
Do	Mar 1-Apr. 4	48	8	Do.
Tonkin	Aug. 1-Sept. 30	19	7	
Do	Dec 1-31	238	62	
Iraq	June 29-Jan 10	138	67	
Do	Jan 11-20	4	2	
Bagdad	Nov. 9-Dec. 27	2	1	
Do	Mar 1-28	2		
Italy				June 29-Dec, 27, 1924 Cases, 63.
Jamaica				Nov. 30, 1924-Jan. 3, 1925. Cases, 50. Reported as alastrim.
Do				Jan 4-Apr. 25, 1925 Cases, 275. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim.
Japan				Aug 1-Nov. 15, 1924. Cases, 4.
Nagasaki	Feb 9-Apr. 26	31	9	
Taihoku	Apr 4-10	1		
Taiwan	Jan 1-31	1		
Java				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in 2 native villages.
Soerabaya	Oct. 19-Dec 31	685	212	
Do	Jan 15-Mar. 25	559	78	
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct 21-Nov. 14	2		
Do	Dec 20-Jan. 2	19	4	
Buitenzorg	Dec 25-31	1		Batavia Residency.
Cheribon	Oct 14-Nov 24	15		
Do	Jan 1-28	3		
Krawang	Jan. 15-21	1		
Pekalongan	Oct. 14-Nov. 24	22		
Do	Dec. 25-31	3		Province
Pemalang	Jan 8-14	1		Pekalongan Residency.
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924. Cases, 5. Jan. 1-Feb 28, 1925: Cases, 6
Lithuania				Jan 1-31, 1925. Cases, 2.
Malta				Apr. 1-15, 1925 Cases, 3
Mexico:				
Chiapas (State)	Mar. 1			Reported severely prevalent.
Durango	Dec. 1-31		5	
Do	Jan. 1-Apr 30		29	
Guadalajara	Dec. 23-29		1	
Do	Jan. 6-Mar. 23		4	
Do	Apr. 21-May 18		14	
Mexico City	Nov. 23-Dec. 27	5		
Do	Jan. 11-May 2	69		
Monterey				Jan. 24, 1925 Outbreak. Mar. 14, 1925, present.
Oaxaca (State)	Mar. 1			Reported severely prevalent.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 5, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico—Continued.				
Salina Cruz	Dec. 1-31	1	1	
Do	Feb. 22-Mar. 31	7	1	
Saltillo	Feb. 22-Apr. 11		2	
San Luis Potosi	Mar. 29-May 9		4	
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-Apr. 30	66	20	
Torreon	Apr. 1-30	1	1	
Tuxpam district	Apr 17-May 7	20	3	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan. 5-Apr. 19		39	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Yucatan (State)	Apr. 5-11			In country towns.
Nigeria				January-June, 1924: Cases, 357; deaths, 87.
Do				July-November, 1924: Cases, 87; deaths, 25.
Paraguay:				
Asuncion	Jan. 4-10		1	
Persia:				
Teheran	Sept. 23-Dec. 31		12	
Do	Jan. 1-Mar. 19		19	
Peru:				
Arequipa	Nov 24-30		1	
Do	Jan. 1-Feb. 28		4	
Philippine Islands:				
Manila	Mar. 29-Apr. 4	3		
Poland				Sept. 21-Dec. 28, 1924: Cases, 30; deaths, 2. Jan. 4-Feb. 14, 1925: Cases, 15; deaths, 1.
Portugal:				
Lisbon	Dec 7-Jan 3	17		
Do	Jan. 4-Apr 25	140		Jan. 4-Apr. 18, 1925: Deaths, 35.
Oporto	Nov 30-Dec 27	3	2	
Do	Jan 11-Mar. 14	3		
Do	Apr. 12-25	2		
Russia				January-June, 1924: Cases, 18,229. July-November, 1924. Cases, 3,665.
Senegal:				
Dakar	Mar. 16-22	4		
Siam.				
Bangkok	Dec 28-Jan. 3	1	1	
Do	Jan. 18-Feb. 21		10	
Do	Mar 1-21	11	4	
Sierra Leone:				
Freetown	Feb. 7-Mar. 15	3		
Kaiyima	Mar. 9-15	1		
Spain				
Barcelona	Nov. 27-Dec. 31		5	
Do	Mar. 19-25		1	
Cadiz	Nov. 1-Dec. 31		51	
Do	Jan 1-Feb. 28		10	
Madrid	Year 1924		40	
Do	January-February		13	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan 4-May 9		102	
Valencia	Nov. 30-Dec. 6	2		
Do	Feb. 15-May 2	6		
Straits Settlements:				
Singapore	Feb. 22-Apr. 4	4	1	
Switzerland:				
Berne	Mar 15-Apr. 18	5		
Lucerne	Nov. 1-Dec. 31	19		
Do	Jan. 1-31	24		
Syria:				
Aleppo	Nov 23-Dec. 27	13		
Do	Jan 4-Feb. 28	71	18	
Beirut	Feb. 11-20	1		
Do	Apr. 1-10	1		
Damascus	Jan 6-13	2		
Do	Feb. 11-20	22		
Tripoli:				
Tripoli	July 14-Jan. 2	53		
Tunis:				
Tunis	Nov. 25-Dec. 29	42	35	
Do	Jan. 1-Apr. 22		325	
Do	Apr. 30-May 6		13	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 5, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Turkey:				
Constantinople	Dec 13-19	5		
Do	Mar 16-Apr 30	8	1	
Union of South Africa				Nov 1-Dec 31, 1924 Cases, 14. Jan 1-31, 1925: Cases, 4—natives Mar. 1-31, 1925. Cases, 9, white, 3, native, 6.
Cape Province	Feb 1-21			Outbreaks
De Aar District	Jan 25 31			Outbreak at railway camp.
Do	Nov 9-Jan. 17			Outbreaks.
Natal	Mar 1-7			Do
Orange Free State	Nov 2-8			Do
Ladybrand District	Jan 15-31			Outbreak on farm.
Transvaal	Nov 9 Jan 10			Do
Do	Feb 1-21			Outbreaks
Uruguay				January June, 1924. Cases, 101; deaths, 2
Do				July-November, 1924: Cases, 53; deaths, 5.
Yugoslavia	Year 1924	330	64	
Do	Jan. 1-Feb 28	6	1	
Belgrade	Mar 1-Apr. 7	6		
On vessel				
S. S. Eldridge	Mar 23	1		At Port Townsend, from Yokohama and ports.
S. S Habana	Feb 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St Malo, France, January, 1924, from Sfax, Tunis, believed to have imported smallpox infection

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec 20, 1924 Cases, 101; deaths, 14
Algiers	Nov 1-Dec 31	5	1	
Do	Jan. 1-Apr. 20	14	7	In villages, department of Algiers Cases, natives, 24; Europeans, 3.
Argentina:				
Rosario	Jan. 1-31		1	
Bolivia:				
La Paz	Nov. 1-Dec 31	3		
Do	Jan. 1-31	2		
Do	Mar. 1-31	1		
Bulgaria				January-June, 1924: Cases, 191; deaths, 28
Do				July-October, 1924. Cases, 5.
Chile:				
Concepcion	Nov 25-Dec 1		1	
Do	Jan 6-12		2	
Do	Jan 27-Feb. 2		1	
Do	Apr. 14-20		1	
Iquique	Nov 25-Dec. 1		2	
Do	Feb. 1-Mar. 28		2	
Talcahuano	Nov 16-Dec. 20		5	
Do	Jan. 4-10		1	
Valparaiso	Nov 25-Dec 7		4	
Do	Jan. 11-Mar 28		17	
Do	Apr. 5-25		3	
China:				
Antung	Mar. 16-22	1		
Manchuria—Harbin	Apr. 8-14	1		
Chosen.				
Chemulpo	Feb. 1-28	1		
Seoul	Nov. 1-30	1	1	
Do	Feb 1-Mar. 31	6	2	
Czechoslovakia				December, 1924: Cases, 5.
Do	Jan.-Mar	68	2	
Egypt:				
Alexandria	Dec 3-9	1	1	
Do	Mar 12-Apr. 8	2		
Cairo	Oct. 1-Dec. 23	13	8	
Do	Jan. 22-28	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 5, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Esthonia				Dec. 1-31, 1924: Cases, 5.
Do	Jan 1-31	4		
France				July-October, 1924: Cases, 7.
Gold Coast				Oct 1-31, 1924: 1 case.
Greece				May-June, 1924: Cases, 116; deaths, 8.
Do				July-December, 1924: Cases, 40; deaths, 4.
Athens	Feb. 1-Apr. 10		10	
Saloniki	Nov. 17-Dec. 15	3	2	
Do	Jan. 25-31	1		
Do	Mar 31-Apr. 20	2		
Japan				Aug. 1-Nov 15, 1924: Cases, 2.
Latvia				October-December, 1924. Cases, 30. Feb. 1-28, 1925. Cases, 11
Lithuania				August-October, 1924: Cases, 15; deaths, 1
Do				Jan 1-31, 1925: Cases, 27; deaths, 2.
Mexico:				
Durango	Dec. 1-31		1	
Do	Mar 15-Apr. 30	1	2	
Guadalajara	Dec 23-29		1	
Mexico City	Nov 9-Jan 3	80		Including municipalities in Federal District.
Do	Jan 11-May 2	105		
San Luis Potosi	Mar 8-14		1	
Do	Apr. 26-May 2		1	
Morocco				November, 1924: Cases, 5.
Palestine				Nov. 12-Dec. 29, 1924. Cases, 10.
Ekron	Dec 23-29	1		
Jerusalem	do	2		
Do	Jan 20-26	1		
Mikveh Israel	do	1		
Petach-Tikvah	Mar 24-30	1		
Ramleh	Feb. 10-Mar 23	2		
Tiberias	Feb. 24-Mar. 2	2		
Peru:				
Arequipa	Nov 24-Dec. 31		3	
Do	Mar 1-31		1	
Poland				Sept 28, 1924-Jan. 3, 1925: Cases, 751, deaths, 57 Jan 4-Feb 11, 1925. Cases, 827; deaths, 68.
Portugal:				
Lisbon	Dec 29-Jan. 4		2	
Do	Apr 6-12		1	
Oporto	Jan 4-Feb 7	2		
Rumania				January-June, 1924. Cases, 2,906; deaths, 328.
Do				July-December, 1924. Cases, 288; deaths, 38.
Constanza	Dec. 1-20	1		
Do	Feb 1-28	2		
Russia				Jan. 1-June 30, 1924: Cases, 95,682. July-November, 1924: Cases, 34,729.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Sweden:				
Goteborg	Jan 18-Feb 28	2		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Tunis	Mar. 5-25	9	1	
Do	Apr 2-May 6	25	5	
Turkey:				
Constantinople	Nov. 15-Dec. 19	6	1	
Do	Jan 2-Apr. 30	10	1	
Union of South Africa				Nov 1-Dec 31, 1924: Cases, 345; deaths, 87. Jan. 1-Mar. 31, 1925 Cases, 200; deaths, 24; native. In white population, cases, 12.
Cape Province	Nov. 1-Dec. 31	126	24	
Do	Jan. 1-Mar. 31	91	12	
East London	Nov. 16-22	1		
Do	Jan 18-Apr. 4	3	2	
Port Elizabeth	Feb 22-Mar. 7	1	1	
Natal	Nov. 1-Dec. 31	130	50	
Do	Jan 1-Feb. 28	43	5	
Do	Mar. 1-31	6	2	
Durban	Feb 15-Mar. 28	4		
Orange Free State	Nov. 1-Dec 31	59	8	
Do	Jan. 1-Mar 31	41	5	
Transvaal	Nov. 1-Dec. 31	30	5	
Do	Jan. 1-Mar. 31	14		
Yugoslavia				Year 1924: Cases, 319; deaths, 22. Jan. 1-Feb. 28, 1925: Cases, 87; deaths, 8.
Belgrade	Nov. 24-Dec. 28	5		
Do	Apr. 8-30	4		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 5, 1925—Continued

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Gold Coast	October-November, 1924	4	4	
Salvador:				
San Salvador	June-October, 1924.	77	28	Last case, Oct. 22, 1924.

TREASURY DEPARTMENT

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SPECIAL ARTICLES

Notes on Sanitary Progress in Pan America
Report of a Milk-Borne Typhoid Outbreak

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UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

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They contain: (1) Current information of the prevalence and geographic distribution of preventable diseases in the United States in so far as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other communicable diseases throughout the world. (2) Articles relating to the cause, prevention, or control of disease. (3) Other pertinent information regarding sanitation and the conservation of the public health.

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PUBLIC HEALTH REPORTS

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NOTES ON SANITARY PROGRESS IN PAN AMERICA

On February 23, 1925, the United States Senate ratified an International Sanitary Convention of the American Republics known as the Pan American Sanitary Code (see PUBLIC HEALTH REPORTS, Vol. 40, No. 11, March 13, 1925), of which the following is one of the provisions:

Article 1. The objects of this code are—

(*a*) The prevention of the international spread of communicable infection of human beings.

(*b*) The promotion of cooperative measures for the prevention of the introduction and spread of disease into and from the territories of the signatory Governments.

(*c*) The standardization of the collection of morbidity and mortality statistics by the signatory Governments.

(*d*) The stimulation of the mutual interchange of information which may be of value in improving the public health and combating the diseases of man.

(*e*) The standardization of the measures employed at places of entry for the prevention of the introduction and spread of the communicable diseases of man, so that greater protection against them shall be achieved and unnecessary hindrance to international commerce and communication eliminated.

In view of the above, there will be published at intervals, as space may be available, notes or reports and occasionally papers or theses on public health subjects from the health departments of the nations signatory to the Pan American Sanitary Code.

Recent Sanitary Progress in the Argentine

From August, 1923, to August, 1924, the following additional sections have been incorporated into the National Department of Hygiene, the National Health Organization of the Argentine Republic:

(1) Infant welfare section.

(2) Section charged with the prevention of syphilis, leprosy, and venereal diseases.

(3) Section charged with the prevention of trachoma and infectious diseases of the eye.

(4) Section for popular health education.

(5) Section for the prevention and cure of hookworm disease.

(6) Section for the prevention and cure of tuberculosis.

(7) A mental hygiene section, including alcoholism, drug addiction, and the care of the insane.

(8) Section for the prevention of typhoid fever.

(9) Section for the prevention of epidemic goiter.

(10) Malaria prevention section.

Tuberculosis

A hospital has recently been established at Mar del Plata for the treatment of bone tuberculosis in children. A new tuberculosis preventorium has recently been opened at Banfield, a suburb of Buenôs Aires. Some 40 or 50 children are now receiving care in this preventorium.

THE COMBAT AGAINST TUBERCULOSIS IN EARLY CHILDHOOD

UNCONSCIOUS IMMUNIZATION AND ARTIFICIAL VACCINATION

Extract from a paper presented at the Fourth Pan-American Congress on Child Welfare, Santiago, Chile, by Dr GREGORIO ARAOZ ALFARO, Professor of the Faculty of Medicine, Buenos Aires, President, National Department of Hygiene, Argentine Republic; President of the Argentine League against Tuberculosis.

Three original theories, which have been accepted in recent times, should, in my opinion, control the present-day direction of the struggle against tuberculosis. These are—

1. *That tuberculous infection is almost always acquired in infancy* and that tuberculosis in the adolescent and the adult, especially tuberculosis in the evolutive pulmonary forms, is, in the majority of cases, the product of *exogenous or endogenous* reinfections, the latter being due to the revival of a tuberculosis latent since childhood. Hence the prime importance of the antituberculosis fight in infancy, which I have particularly insisted upon for many years.

2. *That in civilized countries, especially in densely populated centers, the great majority of children are infected by the tubercle bacillus before the age of 15 years, but that in most instances these infections remain absolutely latent* and can only be revealed through tuberculous manifestations following repeated slight or passing illnesses wrongly interpreted as grippe, digestive infections, tracheo-bronchitis, or simple febrile states without other symptomatology.

3. That if these children, already infected by the bacillus of tuberculosis, but continuing in good health; that is to say, children in whom the process remains absolutely latent, are later again exposed to tuberculous contagion, they resist it much better than do those who are entirely without previous infection.[1]

[1] Marfan, in an admirable clinical exposition, asserted, as far back as 1898, that surgically cured tuberculosis, especially scrofula, adenitis, osteo-arthritis, etc., conferred a relative immunity against pulmonary tuberculosis; and this theory, which practically no one accepted at that time, is to-day generally admitted.

The experience of the European war, a colossal experience in all branches of hygiene and medicine, has brought new knowledge, and has fully proved that which we have observed in our own country among natives after the "desert war;" that is to say, *that men coming from sparsely populated communities of Asia and Africa were much less resistant to the contagion than the European troops, and not only succumbed to it in much greater proportion than the whites, but also succumbed to the acute and generalized forms of tuberculosis* which are similar to those which preeminently attack the young, undersized child, who is known to be extraordinarily susceptible to tuberculous contagion.[2]

Such susceptibility to tuberculosis in colored troops, a fact observed by both English and French military physicians, can not be explained as occurring in men generally more robust and vigorous than Europeans of cities, unless that, having grown up and lived in semidesert surroundings and almost wholly free from Koch's bacillus, they have not been able to acquire that resistance which is conferred by the slight bacillary infections which remain more or less latent in the children of thickly populated centers.[3]

There is, then, in the life of the cities the possibility, frequently realized, that contact with small numbers of Koch's bacillus, diluted in large volumes of air and diminished in virulence by desiccation and the action of light, such as are encountered in the air of the street, in places of assemblage, in passenger vehicles, etc., confers *on the child a sort of relative immunity, thus naturally bringing about a slow, unconscious vaccination.*

This infection, in minimum doses and by naturally attenuated bacilli, up to a certain degree does not appear undesirable, since it is capable of producing a slow and gradual immunization if the child is kept in good condition with regard to hygienic living and diet and does not become debilitated or have an illness which would diminish its resistance, producing a more or less prolonged state of *anergy.*

This is certainly not the case with massive doses and with virulent microbes, such as are found more or less in pulmonary affections in an active and destructive state, which scatter around them great numbers of highly virulent germs. If this contagion reaches young children 1 or 2 years of age, it generally gives rise to grave and rapidly

[2] Borrel: Pneumonie et tuberculose chez les troupes noires Annales de l'Institut Pasteur, 1920.

Calmette: Hacia la preservación de la humanidad contra la tuberculosis. Revista Internacional de Sanidad, July, 1920.

Cummins, L. Lyle: La tuberculosis en las tribus primitivas y su relacion con la tuberculosis de los paises civilizados. Revista Internacional de Sanidad, September, 1920.

[3] Sanarelli. Tuberculosi ed evoluzione sociale, 1915

Bernard, León: Les idées actuelles sur l'infection tuberculeuse. Annales de Médecine, 1920, t. VIII, p. 54.

Calmette, A.: Les acquisitions recentes sur la tuberculose, etc. Compendio a l'Academia de Medicinia de Paris, Nov. 11, 1919.

——: L'infection bacillaire et la tuberculose chez l'homme et chez les animaux. Paris, 1920.

fatal forms of tuberculosis (broncho-pneumonia, miliary tuberculosis, meningitis, etc.). This is the infection especially to be feared. From these particular conceptions, which appear to me to have been just recently acquired, I believe that the following conclusions can be deduced:

1. It is not desirable that the child should reach adolescence without having had some contact with the Koch bacillus, since, in that case, his absolutely virgin organic soil will not present any resistance whatever to the first infective contact, and the consequence will be a grave and often fatal form, which, as is known, abounds in the life of the cities. It is therefore, only in early childhood, especially in the first two years of life, that extreme care should be taken absolutely to protect, if possible, the infant organism against the ingress of the Koch bacillus, something that is indeed difficult completely to accomplish in densely populated centers.

2. The infection from minimal doses which may be acquired in the streets, places of assemblage, etc., by means of small numbers of bacilli already weakened in virulence by desiccation and the action of sunlight and diluted in great volumes of air, is not highly dangerous for the organisms of infants in a state of good general nutrition and brought up in good hygienic conditions.

Only in debilitated children or children subject to faulty hygienic conditions (crowded, damp, or dark dwellings, lack of proper air, light, and physical exercise, improper nourishment, etc.) or children predisposed by diseases such as scarlet fever and whooping cough, could such contact excite tuberculosis more or less active. In other cases slight latent infections would undoubtedly be caused, with consequent gradual immunization of the organism; that is to say, there would occur that which it has not yet been possible to obtain with certainty by means of artificial vaccination against tuberculosis—a vaccination which, in spite of the labors of Maragliano, Ferran, Shiga, and others, has not so far been demonstrated as absolutely efficacious.

The recent work of Calmette permits new hope in this direction; but at the present time we can not count on this artificial method of immunization.

3. The protection in childhood does not imply, then, the complete removal from the environment, almost invariably bacilliferous, of populous centers. It should, however, provide for the complete avoidance of the virulent and mass contagion, already mentioned, and not be concerned, on the other hand, with the slight, scattered, and isolated infections which are common to every densely populated center.

It should provide—

(A) For early childhood, immediate separation from every infected family environment, especially if the person capable of transmitting the germ be the mother or other person who must have frequent contact with the child.

In this case the placing of the child in a healthy environment, in the country if possible, should be done as early as possible, because it has been shown, and the recent studies of Bernard and Debré have confirmed it, that in a few weeks, sometimes by contact, infection has taken place. It is necessary, therefore, to create "family groups" for such children in healthful locations, in the country if possible; and, as with us it is difficult to secure such a place under proper conditions, it is necessary to institute preventive nurseries for these small children, in which they can be brought up with adequate diet and free from all contagion.

(B) For children who have passed the second or third year of age, separation from the infected family surroundings is also supremely desirable, and all means possible should be employed to place them in the country, in the manner of the Granche work in France, or in children's preventoriums in the country, such as that which the Argentine League against Tuberculosis has established at Banfield (Hogar Jose Elordi) and that which the Public Welfare Service of Buenos Aires is to establish shortly.

In the second stage of childhood the child may be left with its family, even though tuberculosis be present in the home, always with the understanding that the infected persons observe all the prophylactic precautions recommended and that the child's home and living conditions be satisfactory.

Thus, then, in the second stage of childhood the general conditions of life, proper hygienic standards being followed, constitute the important factor of prophylaxis, without the necessity for more or less complete separation on which we have insisted for the first stage of childhood.

(C) What I have called in various articles "indirect prophylaxis," that is to say, everything that tends to maintain health and increase the physical vigor of the organism and its defenses against disease, should have first place in the combat against tuberculosis (hygienic, airy, and sunny dwellings, nourishing food, healthful schools and physical exercises in the open air, hardening against cold by means of the fresh-air habit and cold baths, vacation camps, and, for the weaker persons, permanent camps in the mountains or on the seashore, etc.).

(D) Given the relative facility with which children infected with the latent forms of tuberculosis infection are maintained absolutely unharmed, and with which they are cured of the attenuated forms

of the disease which are common in childhood (adenitis, scrofula, etc.), we must especially interest ourselves in the early recognition of such latent infections, masked or attenuated forms, especially through the general use of tuberculin reactions and of the Röntgen rays, in order that such children may be subjected to the hygienic and climatic treatments which are not only curative but which also aid in immunization against subsequent and more virulent attacks.

The early and proper treatment of affections called pre-tuberculous, which are, in general, cases of latent or masked tuberculosis, is, therefore, of great social importance, and the State should use every endeavor to have such treatment applied under the best conditions to all who require it. Schools for enfeebled children should be increased in number, as well as open-air camps in the mountains or by the seashore; and it should be assured that these estblishments are supplied with all the essential factors of treatment, including specific remedies (tuberculins, etc.), which, when administered by competent and experienced physicians, can contribute to the hastening of the active immunization of the organism.

AN OUTBREAK OF TYPHOID FEVER CAUSED BY MILK-BORNE INFECTION

By L. L. Lumsden, Surgeon, United States Public Health Service

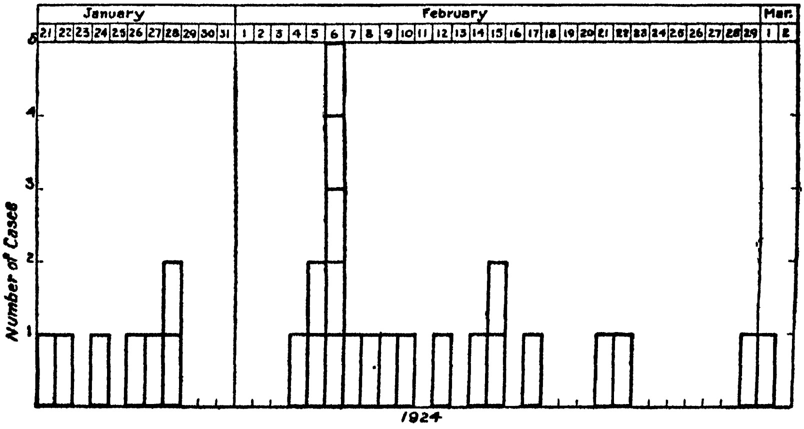
On March 12, 1924, the Surgeon General of the United States Public Health Service received a request from the authorities of Lincoln Memorial University at Harrogate, Tenn., for assistance in an investigation of an outbreak of typhoid fever at that institution. The request was approved by the Tennessee State Health Department. The writer was detailed for the duty. He arrived at Harrogate early on March 15 and, with Mr. H. R. Fullerton, director of the division of sanitary engineering of the State health department, began a study of the situation. The excellent cooperation received from the university authorities and the presence of a number of convalescents from whom epidemiological data could be obtained quickly at the improvised hospital in the university grounds greatly facilitated the work. Our field surveys and epidemiological studies were completed by the evening of March 17, at which time a report with definite recommendations was submitted to the members of the faculty and others concerned.

The investigation included (1) a survey of the water supply and the excreta-disposal system of the university, (2) a detailed epidemiological inquiry among a fair sample of the persons stricken in the outbreak, (3) a canvass of 86 resident students who were not stricken, and (4) an examination of conditions under which milk and other foods possibly involved were produced and served.

EXTENT, DISTRIBUTION, AND CHRONOLOGY OF THE OUTBREAK

At the beginning of the outbreak there were about 430 students at the university. Of these, about 330 were resident and 100 were day students. Besides the resident students, the university had a resident population of about 75, composed of members of the faculty with their families and employees with their families.

The period of the outbreak was from January 21 to March 1, 1924. At least 100 cases of typhoid fever occurred in the course of the outbreak. Eight terminated in death. The outbreak reached its height about February 6, at which time a majority of the students left the university and returned to their homes in Tennessee, Kentucky, Virginia, and other States. A number of the cases—about 40 per cent of the total—developed among the students who went home before onset of illness. Besides the diagnosed cases there were probably among the students who had left the university because of the outbreak some mild cases which were not recognized as typhoid and which were not reported to the university authorities.



Dates of onset of 28 cases.

The outbreak was confined to the resident students who took their meals in the mess halls of the university. About 100 persons residing on the campus, and the 100 day students, who were exposed to the water supply and other conditions in the university grounds, but who took none of their meals in the mess halls, escaped entirely. Thus it was apparent that the outbreak must have been caused by infection distributed in the mess halls. Over 100 of the 300 resident students taking their meals in the mess halls were stricken. Such an attack rate is remarkably high, and, in itself, is strongly suggestive of heavy dosage infection.

Of the forty-odd typhoid fever patients remaining under treatment at the university hospital at the time of the investigation, 28 were

sufficiently near recovery to be interviewed personally. The detailed epidemiological histories obtained from these 28 patients on March 16 are believed to be fairly representative for the whole group of cases occurring in the outbreak.

The dates of definite onset (date patient took to bed) of these 28 cases are indicated in the accompanying graph (p. 1303).

The interval of six days without a case onset between January 28 and February 4 perhaps would have been filled in if the dates of onset of all the cases occurring in the outbreak could have been ascertained accurately; but if it should represent a break in the current of infection, it would have epidemiological significance.

Of the 28 cases furnishing detailed epidemiological histories, 17 were in boys and 11 in girls. The age range was from 16 to 22 years. The age-sex distribution of the disease appeared to be in the proportion of the age-sex distribution of the whole student body.

FINDINGS

The university is located on extensive grounds with topography, climate, and other factors presenting every natural advantage for healthfulness.

The systems of water mains and sewers, installed originally for use in connection with a large hotel project, are for the most part somewhat archaic.

Water supply.—The water supply is obtained from a large free-flowing spring in a cavern on the side of a mountain over a mile from the university. From the spring the water is conveyed through an iron conduit to the university grounds. The watershed of the mountain above the spring is uninhabited, and the water as it leaves this source is, according to all indications, free from any likelihood of contamination with human excreta. Water from this same source is supplied to the towns of Cumberland Gap and Harrogate, with an aggregate population of about 800, both of which towns escaped the outbreak.

It appeared that the water supply neither at its source nor in its course from the spring to the university grounds could have been infected so as to be a factor in the causation of the outbreak. The mains in the university grounds through which the water is distributed are made of wood,. They leaked at many points. Their capacity was much more than necessary to serve their purposes. A water pressure was not maintained in them constantly. Therefore, the possibility of contamination of some of the water mains by seepage of sewage from some near-by leaky sewers was considered. Bacteriological examinations made by the State health department indicated that colon bacilli at times got into the water in the course of its distribution

through the system of mains in the university grounds. The freedom from infection of some 200 persons who drank water regularly from the taps in the university grounds but who took none of their meals at the mess halls during the period of causation of the outbreak proved, however, that the university water supply was not the vector of the infection.

Excreta disposal.—Though the sewerage system was in obvious need of drastic improvement, and though some grossly insanitary open privies were in use within the university grounds, no evidence was found that the university excreta disposal system was an important factor in the spread of the infection.

Place of residence.—Of the 330 resident students at the university during the period of causation of the outbreak, 84 were domiciled in Norton Hall, 119 in D. A. R. Hall, 77 in Grant Lee Hall, 34 in Avery Hall, 2 in the Conservatory, and 14 at private residences within the university grounds. Of the 28 students in whom the cases especially investigated developed, the places of residence during the period of causation of the outbreak were as follows: 10 at Norton Hall, 7 at D. A. R. Hall, 7 at Grant Lee Hall, 3 at Avery Hall, and 1 at a private home. Thus it appeared that place of residence within the university grounds did not in itself influence importantly the chances for infection.

Diagnosis and clinical course of cases.—The clinical course of the cases was quite typical of typhoid fever caused by heavy dosage infection in young vigorous persons. For a large majority of the cases the clinical diagnosis was confirmed by laboratory tests.

The mode of onset and the clinical course of the cases furnished contributory evidence for the epidemiological diagnosis of the situation. In many of the cases the onset was sudden with severe headache, chill, sharp abdominal pain, or a feeling of being "completely knocked out." For a large proportion the temperature recorded immediately after the student was reported ill was as high as 104° F., and after running high for some days gradually declined. Thus, the temperature charts presented a very different picture from that with the step-ladder rise usually given by cases caused by small dosage infection. The duration of the fever in the cases occurring in this outbreak was seldom over three weeks, and for a very considerable proportion not more than two weeks. Intestinal hemorrhages were common—occurring in over 60 per cent of the cases treated at the university hospital. Of the 28 cases especially studied, 12 either had sudden onsets of definite symptoms or were ill enough to give up and go to bed after having prodromal symptoms for a period of less than four days.

Immunization.—Five, or 18 per cent, of the 28 cases were in students who had received three doses of antityphoid vaccine within the previous four years—one in 1920, two in 1922, one in 1923, and one had received the third dose only 10 days before onset of illness. Of the 86 students not stricken in the outbreak who were canvassed, 32, or 37.2 per cent, gave a history of having received antityphoid vaccine within the five-year period ending December 31, 1923.

Three and five-tenths per cent of the cases and 9.3 per cent in the control group gave a history of having had an attack of typhoid fever before December 1, 1923.

The percentage of cases among the students who either had received antityphoid vaccination or had had a previous attack of typhoid fever pointed to heavy dosage infection in this outbreak.

Bacillus-carriers.—As the outbreak was exclusively among the students taking meals in the university mess halls, and since the much exploited human "carrier" hypothesis may be applied conveniently on general and superficial evidence to almost any occurrence of any one of numerous infectious diseases, it was quite natural for the presence of a typhoid-bacillus "carrier" among the cooks or waiters or other workers in the mess halls to be suspected as the source of the infection. Such locally popular suspicion was strengthened somewhat perhaps by the fact that a recently employed cook in the main mess hall was named "Mary."

Much of the work in the mess halls was done by students. Careful attention was given in the course of our studies to the possibility of a "carrier" among the servants employed who were in a position to infect the food served to the students who developed typhoid fever.

From the information obtained, it appeared that Mary W., a colored woman employed as cook, was the only worker in the mess halls who was in a position possibly to have operated as a major factor in the spread of the infection. Mary was engaged as cook from November 22, 1923, to January 24, 1924. The main part of the period of causation of the outbreak was between January 1 and February 10. Thus, the synchronology was somewhat suggestive. She cooked in the kitchen at Norton Hall from the beginning of her employment at the university to January 4, when she was transferred to the kitchen of Grant Lee Hall. From January 4 to the time of her departure from the university on January 24 she worked exclusively at Grant Lee Hall. If Mary had been the main factor in the spread of the infection, the occurrence of cases among the two groups of students taking meals in the two different mess halls should have been very different from what it was. The shift of the students from one mess hall to another made the study of this phase of the situation rather difficult.

From such information as could be obtained the circumstances appeared to have been as follows: For several months up to January 4 about 300 students took their meals at Norton Hall; then about 140 of these students were transferred to the Grant Lee Hall mess; from January 5 to about February 5, when the exodus from the university occurred, the number of students taking meals at Norton Hall mess was about 160 and at Grant Lee Hall mess about 140. On February 8, the Norton Hall mess was closed, and after that date almost all of the resident students (about 100) remaining at the university took their meals at Grant Lee Hall mess. During the period of causation of the outbreak, about 15 resident students boarded at private homes on the campus. None of them was stricken. About 15 others took their meals regularly during that period at the Blue Bird restaurant on the campus. One of them who had meals occasionally within this period either at Norton or Grant Lee Hall mess was stricken. Another food place patronized considerably by the students was located across the street from the campus and was designated as the "hunk stand." There sandwiches, cakes, candies, and soft drinks were obtainable. Only 4 of the 28 cases especially studied were in students who had eaten at the "hunk stand" within the 30 days immediately before onset of their illness. It appeared, therefore, that if the infection causing the outbreak had been spread through food it must have been spread through that served either at Norton or Grant Lee Hall mess, or both. Mary had cooked at each place for a part of the period of causation of the outbreak.

Of the 28 cases furnishing detailed epidemiological histories, 17 were in students who had eaten at Norton Hall but not at Grant Lee within the three weeks before definite onset of illness, six had eaten at Grant Lee but not at Norton, and five had eaten at both of these mess halls. The statements obtained as to the places at which meals were taken by these 28 students during the period within which they must have become infected were as follows:

	Norton Hall	Grant Lee Hall	Blue Bird restaurant	"Hunk stand"
Solely	13	3	0	0
Principally	5	5	1	0
Occasionally	4	3	3	4
Total	22	11	4	4

The dates of definite onset of illness of the cases in the 23 students who had taken meals at either Norton Hall or Grant Lee Hall to the

exclusion of the other hall are indicated in the following tabular statement:

Date of definite onset	Number of cases in students who ate at— Norton but not at Grant Lee	Grant Lee but not at Norton	Both Norton and Grant Lee	Date of definite onset	Number of cases in students who ate at— Norton but not at Grant Lee	Grant Lee but not at Norton	Both Norton and Grant Lee
Jan. 21	1	0	0	Feb 10	0	0	1
Jan. 22	1	0	0	Feb. 12	0	1	0
Jan. 24	0	0	1	Feb. 14	0	0	1
Jan. 26	1	0	0	Feb. 15	1	1	0
Jan. 27	1	0	0	Feb. 17	1	0	0
Jan. 28	2	0	0	Feb. 21	0	0	1
Feb. 4	1	0	0	Feb 22	0	0	1
Feb 5	2	0	0	Feb. 29	0	1	0
Feb. 6	5	0	0	Mar. 1	0	1	0
Feb. 7	0	1	0				
Feb 8	1	0	0	Total	17	6	5
Feb. 9	0	1	0				

If there was no error in the statement obtained to the effect that from January 4 to February 5 the number of students taking meals at the Norton Hall mess and the Grant Lee Hall mess was, respectively, 160 and 140, the disproportionately large number of cases in this group of 28 from among the students who took their meals at Norton Hall mess is peculiar and can not be explained with entire satisfaction on the evidence at hand. It may be that the exodus from the university about February 5 was more extensive among the students who for the month before had been messing at Grant Lee than among those who for the same period had been messing at Norton, so that fewer of the Grant Lee group who developed typhoid fever were available for interview at the university hospital on March 16. Such a possible explanation is supported by the results of a canvass among 86 students who had not been stricken in the outbreak. The statement from these 86 students was to the effect that within the period of 60 days covered by the months of January and February, 23 of them had eaten at Norton mess but not at Grant Lee mess, 8 had eaten at Grant Lee but not at Norton mess, and 55 had eaten either at both or at neither of these two mess halls. Thus the proportion in this "control" group giving a history of eating at Norton mess to the exclusion of Grant Lee mess, or vice versa, was approximately the same as obtained with the 28 students who developed typhoid fever.

If there was no error in the record of the number of students patronizing these two different messes, and if the exodus from the university was not proportionately greater for the Grant Lee mess group, then it appears that though some of the infection was spread in both messes, the bulk of it was spread in the Norton Hall mess (see p. 1307).

The cook, Mary, was transferred from Norton to Grant Lee mess kitchen on January 4. Unless she left some infection at Norton Hall which continued to get into the food served there for some time after she had gone to Grant Lee, it does not appear likely, in view of the general character of the outbreak and the clinical course of the cases—with, inferentially, short incubation periods—that she could have been responsible for the cases developing on and after February 4 among those who patronized Norton Hall mess to the exclusion of Grant Lee Hall mess. Unless she left some infection at Grant Lee which continued to operate there for some time after her departure from the university on January 24, it does not appear likely, in view of the same considerations, that she could have been responsible for the cases developing on and after February 21 among the patrons of Grant Lee mess.

Both of these mess halls were run on very economical principles. Almost invariably all of the food prepared on one day was disposed of on that day. Now and then a small quantity of potatoes or other vegetables might be left over, but immediately before being served again it would be thoroughly reheated. According to the information obtained, the left-over food at neither mess, within the period of causation of the outbreak, included in any instance anything such as head cheese, pudding, cake, or other food likely to be served without being reheated and in or on which typhoid bacilli might live for a number of days and perhaps multiply.

The high case incidence, the explosiveness of the outbreak, the clinical course of the cases, and all the other features of the outbreak strongly suggested heavy dosage infection with short incubation periods resulting. Such dosage is not reasonably to be expected from the contamination of food with excreta on the fingers of a "carrier" or on the feet of insects unless the food is so contaminated some time before it is eaten and is of a sort in which typhoid bacilli will multiply rapidly. According to all the information obtained, there was no likelihood of such conditions being fulfilled in the course of the handling of the foods at the mess halls involved.

Though both the clinical and the epidemiological evidence was opposed to the hypothesis of infection from a human "carrier" among the workers in the mess halls of the university, Mr. Fullerton traced the cook, Mary, to her home in a distant neighborhood, and succeeded in obtaining specimens of blood, feces, and urine from her. The laboratory examinations of these specimens by the State health department were reported negative for typhoid.

Thus, both epidemiological and bacteriological findings appear to justify the conclusion reached that cook Mary could not have been an important factor in the spread of the infection; but the possibility

of temporary "carriers" among student workers in each of the two mess halls, of course, could not be eliminated absolutely.

As the evidence was being collected to determine whether a human carrier of typhoid bacilli among the food handlers in the university mess halls could have been responsible, careful consideration was given to every possible factor which might have operated to cause, outside the mess halls, the infection of foods or beverages to which the students were exposed in the mess halls or elsewhere.

Drinking water.—There was no disproportionate case incidence from exposure to the water delivered from any tap or set of taps within the university grounds. Thus it appeared that the infection could not have been caused by local contamination of any of the water mains. As is indicated in the section under the heading "water supply" of this report, the university water supply as a whole could not have been an important vector of the infection causing the outbreak.

Of the 28 cases especially investigated, all were in students who within the 30 days prior to onset of illness had used the university supply as the sole or principal source of water for drinking purposes. Twenty-three of them had been exposed to no other drinking water. Five had used this water principally and had occasionally drunk water outside the university grounds.

Soda water.—Eighteen of the 28 cases gave a history of no exposure to soda water or other soft drinks. Ten were in students who had indulged in soft drinks at the "hunk stand," and two of these had drunk soda water also while visiting in some near-by town. As only 36 per cent of the 28 students stricken gave a history of exposure to drinking or eating at the "hunk stand" within the 30 days prior to onset of illness, and as 71 per cent of the 86 students canvassed among those who were not stricken gave a history of such exposure in January or February, it was evident that the "hunk stand" was not an important factor in the distribution of the infection.

Ice cream.—Only 2 of the 28 cases gave a history of exposure to ice cream—1 at Cumberland Gap, Tenn., and 1 at Corbin, Ky.

Raw vegetables.—Twenty-five of the 28 students furnishing the cases especially investigated were sure that they had not eaten, within the 30 days before onset of their illness, any raw vegetables such as lettuce or celery, which might have served as vectors of infection.

Raw shellfish.—None of the 28 cases gave a history of exposure to raw oysters, clams, or other shellfish.

Personal contact.—Only 5 of the 28 cases were in students who, within the period of infection, were associated with previous cases to a sufficient degree for their infection to be considered as possibly

due to personal contact. It is quite doubtful that any of these 5 cases was a secondary case.

The prevention of the occurrence of a considerable number of secondary cases from direct personal contact infection was clearly attributable to the very thorough prophylactic measures which were carried out by the attending physicians, the nurses, and the university authorities. As the cases developed, the patients were isolated promptly. The sanitary measures at the bedside, including disinfection of excreta, proper care of hands, scalding of dishes, etc., appeared to have been well enforced.

Milk.—As one possible factor after another was eliminated in the course of investigation, the evidence continued to point to milk as the major vector of the infection.

The explosive character of the outbreak, the high case incidence among the exposed, the large proportion of cases with sudden onsets of pronounced and severe symptoms, the clinical course of the cases, and the relatively low degree of resistance furnished by recent anti-typhoid vaccination—all were suggestive of heavy dosage infection such as may come from milk into which typhoid bacilli, introduced through contamination with (perhaps) highly diluted or very minute quantities of human excreta, have had time to multiply before the milk is ingested.

Raw milk was one of the staple articles of diet in the mess halls. Therefore it was entirely possible for infection in milk to reach most of the resident students.

Of the 28 students furnishing the cases investigated in detail, all stated that for the four weeks or more prior to the onset of their illness they had partaken freely of the milk served in the mess halls—25 having used it regularly as a beverage, 2 having used it in cereals regularly and also as a beverage occasionally, and 1 having used it in cereals only.

Of the 86 students in the "control" group canvassed, 76 per cent stated that they used milk as a beverage in January and February. Thus it appeared that the case incidence in the outbreak had been somewhat higher among those who were milk drinkers than among those who were not.

The milk supply of the university during the period of causation of the outbreak was obtained from four different sources and in amounts as follows: (1) The university herd, 40 gallons a day; (2) farm of W, 16 gallons a day; (3) farm of S, 20 gallons a day; and (4) dairy of C, 8 gallons of cream a week.

The cream bought from dairyman C. was all made into butter, and as no butter, but oleomargarine instead, was supplied to the mess halls, that part of the cream supply was dismissed from consideration as a vector of the infection.

According to the statements obtained, it appeared that the daily distribution of the milk from the other three sources was about as follows:

The university herd supply: Of the morning milk, 15 quarts of the whole milk were bottled and sold to families at Harrogate. Some was delivered to the households of members of the faculty on the campus. What was left was separated at the university creamery, the cream being stored for butter making and the skim milk being sent to the mess halls. The night milk (whole) was sent to the mess halls. Some of the butter made from the university herd cream was used in the households of the members of the faculty, and the remainder was sold to the trade in two or three towns in the general vicinity. The university herd milk was always run through the creamery before that from the outside sources. After the outside farm milk had been run through the creamery, the parts of the separator and the other dairy equipment which had been in contact with the milk were said to have been thoroughly scalded invariably before the next day's supply of university herd milk was processed.

Supplies from farms of W. and S.: Milk from these farms was delivered to the university creamery in the morning, the deliveries including the night milk of the day before and the morning milk of that day. Some of these parts of the supply were separated, the cream being stored for butter making, but all of the milk, whether skim or whole, from both of these outside farms was distributed to and consumed in the mess halls. It was understood from the statement of the dairy manager in our first interview with him that all the butter made from the cream derived from the farms of W. and S. went to the mess halls, but later on, after we had learned that oleomargarine instead of butter was used in the mess halls, he said there had been a misunderstanding and that the butter made from those creams was distributed as was that made from the college herd cream. It appeared certain that only a small proportion of the butter supply was made from cream separated from the milk bought from farmers W. and S., and it is quite probable that on some days none of the cream from either of these sources went into the butter-making supply. All the statements obtained were definitely to the effect that none of the milk received from farmer W. or S. was distributed to any place except the student mess halls. Whatever cream from these sources was used for butter making, was "ripened" for four to eight days before being churned.

The university creamery was fairly well equipped and appeared to be operated in a cleanly manner. The water running through the cooling room where the cans of milk were stored was exposed to contamination from near-by sewers, cesspools, and privies. There were two grossly insanitary open-surface privies on the side of the hill

within 60 feet of the dairy. These would constitute a definite source of danger in the warmer weather seasons, because flies could readily make the trip from the exposed excreta to the milk in the dairy.

If the infection causing the outbreak had been introduced into the milk—including that from the university herd—at the dairy, there would have been no reason for the outbreak to have been confined to those who took their meals at the mess halls. Therefore it appeared that if the infection was milk-borne, the vector must have been the milk obtained from farmer W. or farmer S., or both. These sources of milk were visited and inspected on the morning of March 17. The conditions surrounding the dairying business of W. were found appallingly insanitary. The residence was located in a gulch. The milk house was about 40 feet from the residence and was over a small stream fed by a near-by spring and several other springs up the gulch. No privy was provided for the use of the family. Recent deposits of human excreta were observed between the residence and the milk house. The water in the stream over which the milk house was built and in which the cans of milk were set for cooling was exposed to gross pollution from several open-surface privies and stables within a hundred yards or so up the gulch. Presumably the obviously contaminated water from W.'s spring or from the stream fed by this spring was used for washing the milk cans. The stable yard, located about 50 yards down gulch from the residence, was dirty. The cows were dirty. Incidentally it may be stated that these cows had never been tuberculin-tested. All the conditions surrounding the dairying were such as to make certain the introduction, from time to time, of human excreta into the milk sent from this farm to the university. A typhoid-fever patient or a human carrier of typhoid bacilli on this place, or at any of the several homes within the immediate vicinity up the gulch, would complete the chain of circumstances necessary to the introduction of infectious matter into the milk. There were a good many visitors to this settlement between December 1, 1923, and January 1, 1924. Upon inquiring about illness in the neighborhood, we learned that Mr. W. himself, who had most to do with the handling of the milk, became indisposed about December 10. By Christmas Day he had become ill enough to give up and go to bed. After remaining in bed for about a week, he returned to work but felt "poorly" for two or three weeks afterwards. He was not attended by a physician and his case was not diagnosed during his illness. Mr. W. was not at home at the time of our visit. Specimens of feces, urine, and blood were obtained from him a few days later and sent to the State health department for examination. The feces and urine were reported negative for typhoid, but the blood in high dilution gave a positive Widal reaction. It seems

highly probable that Mr. W.'s case was one of mild typhoid fever, and that either Mr. W. or some visitor from whom he contracted the disease was the source and the milk from his farm the vector of the infection causing the outbreak at the university.

The conditions surrounding the dairying of farmer S. were also grossly insanitary but not so pronounced as those at the place of farmer W. No history was obtained of recent illness suggesting typhoid in the household or immediate neighborhood of farmer S.

There was no way of ascertaining the proportion in which the milk received from W. was distributed to each of the mess halls involved. It is quite possible that most of it went to Norton Hall mess. This seems to offer the most probable explanation of the apparent disproportion of cases among the students who took their meals at that mess. (See pp. 1307 to 1308.)

If butter was made from cream separated from milk received from both W. and S. and was sent to the faculty households and the extra-university trade, the explanation of the entire escape from the outbreak by the consumers of that butter might be found in one of the following hypotheses:

(1) The organisms of the strain causing the outbreak were not sufficiently virulent to cause disease unless ingested in large number.

(2) None of the cans of milk containing the infection (and it is quite reasonable to believe that the milk was not uniformly infected so as to have typhoid bacilli in every 5-gallon lot) was drawn upon for cream used in the butter making.

(3) The typhoid bacilli of the strain operative were not sufficiently vigorous to survive in the souring cream.

CONCLUSION

The practical conclusion based on the findings was (March 17, 1924) and is (April 11, 1925) that the outbreak was caused by infection in a milk supply obtained from a farm within the vicinity of the university and consumed by the students taking their meals in the mess halls of the university.

RECOMMENDATIONS

The recommendations submitted on the evening of March 17, 1924, to the president of the university, several members of the faculty, the two attending physicians, and the head of the Red Cross force coming from Atlanta, Ga., to assist (and who did assist with a high degree of efficiency) in the study and the control of the outbreak, were as follows:

(1) Begin at once and continue pasteurization of all milk to be used at eating places at the university and discontinue as soon as practicable the use of all milk except that obtained from the univer-

sity dairy herd until radical sanitary improvements can be made on the dairy farms outside the university grounds from which the auxiliary supplies are obtained.

(2) Insist upon antityphoid vaccination of all students who did not have typhoid fever in the recent outbreak, or who have not been vaccinated against typhoid fever within the last six months, as they return to or enter the university within the next 12 months.

(3) Continue rigid sanitary precautions to prevent the spread of infection from known typhoid-fever patients for at least three weeks after temperature of patient becomes normal, and, if practicable, until two bacteriological examinations show them free from infection.

(4) Disinfect at once and abolish as soon as possible all insanitary (open) privies within the university grounds, and replace them either with water-closets, connected with the sewerage system, or with sanitary (fly-tight) privies.

(5) Have rigid cleanliness carried out in kitchens and dining halls, including thorough scalding or sterilization of used dishes and eating utensils, and cleanliness of hands and clothing of workers.

(6) Keep one or more public health nurses at the university to help carry out sanitary measures and to instruct in hygiene.

(7) Have a thorough overhauling of water and sewerage systems as soon as practicable to make them more efficient.

(8) Have food handlers now at the university, and others to be employed, examined so far as may be practicable to determine their freedom from infection.

POSTSCRIPT

According to reports received from the university, it appears that the above recommendations have been carried out in the main. Pasteurization of the milk supply was begun at once and has been continued.

In a letter dated March 30, 1925, from the president of the university is the statement that not a case of typhoid fever has occurred at the Lincoln Memorial University since March 17, 1924.

With the sanitary measures already carried out, and expected to be continued, and with the additional measures which readily can be and presumably will be carried out, there is every reason to believe that Lincoln Memorial University is now and will be hereafter a safer place at which to live, so far as exposure to infectious disease is concerned, than it was previous to the outbreak of typhoid fever described in this report.

The occurrence of this outbreak indicates (1) the critical importance of pasteurization of all public or community milk supplies; (2) the wisdom of making practical sanitation a part of the curriculum of every seat of learning; and (3) the need of having in our rural communities well-organized whole-time local health service.

DEATH RATES IN A GROUP OF INSURED PERSONS

COMPARISON OF PRINCIPAL CAUSES OF DEATH, MARCH AND APRIL, 1925, AND APRIL AND YEAR, 1924

The accompanying table is taken from the Statistical Bulletin for May, 1925, published by the Metropolitan Life Insurance Co. It presents the mortality experience of the company for March and April, 1925, and for April and year, 1924. The rates are based on a strength of approximately 16,000,000 insured persons.

Only one important disease, influenza, registered a considerably higher death rate in this group for April this year than for the same month last year; whereas large declines are shown for tuberculosis, organic heart diseases, pneumonia, and diarrheal complaints, and smaller reductions for typhoid fever, cancer, and puerperal causes. The death rate for April, 1925, for all causes was 10.1 per 1,000, as compared with 10.8 for April, 1924—a reduction of 6 per cent.

The record for fatal accidents was less favorable, showing an increase over the corresponding period of last year. Automobile fatalities during April, as in March, recorded an increase this year.

Death rates (annual basis) for principal causes per 100,000 lives exposed, March and April, 1925, and April and year, 1924

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Death rate per 100,000 lives exposed [1]			
	April, 1925	March, 1925	April, 1924	Year 1924 [2]
Total, all causes	1,014.9	1,025.6	1,076.5	907.5
Typhoid fever	2.0	2.4	2.8	4.4
Measles	4.5	3.4	14.8	7.2
Scarlet fever	4.8	6.1	6.7	4.4
Whooping cough	8.8	6.9	11.6	7.4
Diphtheria	12.8	11.5	12.6	13.2
Influenza	44.5	47.7	29.1	16.0
Tuberculosis (all forms)	105.4	113.4	120.5	104.5
Tuberculosis of respiratory system	92.3	99.3	106.1	92.6
Cancer	70.0	69.9	73.1	70.4
Diabetes mellitus	16.1	17.9	16.9	14.9
Cerebral hemorrhage	56.6	58.3	60.5	60.2
Organic diseases of heart	138.5	146.1	147.5	123.7
Pneumonia (all forms)	134.0	140.4	148.5	88.8
Other respiratory diseases	16.8	18.7	19.2	13.9
Diarrhea and enteritis	17.5	16.9	20.8	32.2
Bright's disease (chronic nephritis)	76.1	76.8	75.8	65.5
Puerperal state	18.9	19.2	19.8	16.8
Suicides	7.2	7.7	8.1	7.2
Homicides	7.7	6.5	7.5	7.1
Other external causes (excluding suicides and homicides)	57.3	52.5	52.8	62.7
Traumatism by automobile	13.6	14.0	13.0	15.7
All other causes	215.2	203.3	227.9	187.0

[1] All figures include infants insured under 1 year of age.
[2] Based on provisional estimate of lives exposed to risk in 1924.

ABSTRACTS OF CURRENT PUBLIC HEALTH COURT DECISIONS

Compensation granted under workmen's compensation act for weakened resistance due to occupation resulting in grinder's consumption.—(Connecticut Supreme Court of Errors.) The plaintiff was employed

by the defendant company for a number of years in wet grinding. In the plaintiff's occupation of tool grinder, water, laden with minute particles of grindstone and steel, was constantly splashed upon the operator and the gritty matter taken into the lungs through the nose and mouth. The lodgement of these particles in the lungs produced in the plaintiff a disease known as pneumoconiosis which developed into a mixed infection of a tubercular, staphylococcic, and streptococcic nature. The so-called occupational disease amendments of the workmen's compensation act read in part as follows:

If an injury arises out of and in the course of the employment, it shall be no bar to a claim for compensation that it can not be traced to a definite occurrence which can be located in point of time and place. * * *

The word "injury" as the same is used in said chapter shall be construed to include any disease which is due to causes peculiar to the occupation and which is not of a contagious, communicable, or mental nature.

The court held that the injury in this case was a weakened resistance to infection called pneumoconiosis, which injury was not communicable, and the fact that grinder's consumption (a communicable disease) developed from the injury did not bar recovery of compensatin. The court said in part:

The consequent effects of the weakened resistance to infection in this case, to wit, the infection producing grinder's consumption, is not the injury compensated for; it is the weakened resistance to infection which is the injury compensated for; the consequences of that condition when infection occurs is deemed a part of the weakened resistance to infection (Kovaliski *v.* Collins Co. et al., 128 Atl. 288).

County area plan law for control and suppression of tuberculosis in cattle held valid.--(Minnesota Supreme Court.) Chapter 269, Laws of 1923, authorizing counties to put into effect the county area plan for the control and suppression of tuberculosis in cattle was held valid, the court stating that the object of the statute was to promote and preserve the public health. (Schulte et al. *v.* Fitch et al., 202 N. W. 719.)

AMERICAN DIETETIC ASSOCIATION TO MEET IN OCTOBER

The annual convention of the American Dietetic Association will be held at the Edgewater Beach Hotel, Chicago, Ill., on October 12, 13, 14, and 15, 1925.

The program is being arranged to include the various branches of the food problem. The first three days will be devoted to a program of speeches, discussions, and exhibits, while the last day will be given over to a series of trips having for their purpose the demonstration of the practical application of dietetic knowledge, especially the results in infant feeding achieved by the Infant Welfare Organization of Chicago, stations of which organization will be open for inspection.

DEATHS DURING WEEK ENDED JUNE 6, 1925

Summary of information received by telegraph from industrial insurance companies for week ended June 6, 1925, and corresponding week of 1924. (From the Weekly Health Index, June 9, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended June 6, 1925	Corresponding Week, 1924
Policies in force	60, 133, 708	56, 256, 504
Number of death claims	10, 774	11, 000
Death claims per 1,000 policies in force, annual rate	9. 3	10. 2

Deaths from all causes in certain large cities of the United States during the week ended June 6, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, June 9, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended June 6, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended June 6, 1925[2]
	Total deaths	Death rate[1]		Week ended June 6, 1925	Corresponding week, 1924	
Total (64 cities)	7, 425	14. 0	12. 3	899	741	
Akron	51			3	11	33
Albany[3]	29	12. 6	18. 5	2	5	44
Atlanta	105			12	8	
Baltimore[3]	235	15. 4	13. 5	20	28	58
Birmingham	63	16. 0	12. 5	10	6	
Boston	232	15. 4	13. 6	41	21	109
Bridgeport	33			2	3	32
Buffalo	178	16. 8	12. 9	35	19	142
Cambridge	28	13. 0	10. 7	6	0	103
Camden	33	13. 4	16. 1	5	4	82
Chicago[3]	724	12. 6	10. 8	81	73	72
Cincinnati	136	17. 3	14. 6	7	13	41
Cleveland	271	15. 1	9. 8	39	20	97
Columbus	92	17. 1	11. 7	10	4	94
Dallas	47	12. 7	11. 1	12	9	
Dayton	53	16. 0	10. 2	4	4	64
Denver	80	14. 8	13. 0	8	11	
Des Moines	32	11. 2	11. 1	3	2	51
Detroit	332			67	43	113
Duluth	24	11. 3	12. 0	3	5	63
Erie	28			5	2	98
Fall River[3]	22	9. 5	16. 4	2	9	29
Flint	20	8. 0	8. 8	4	2	66
Fort Worth	23	7. 9	8. 4	2	1	
Grand Rapids	39	13. 3	10. 5	5	1	78
Houston	40	12. 6	14. 7	7	6	
Indianapolis	114	16. 6	11. 3	11	6	76
Jersey City	86	14. 2	12. 5	10	13	70
Kansas City	26	11. 0	15. 0	3	3	63
Kansas City, Mo	93	13. 2	11. 5	4	9	
Los Angeles	269			41	34	114
Louisville	95	19. 1	14. 7	3	6	26
Lowell	27	12. 1	12. 2	3	3	52
Lynn	28	13. 9	15. 6	4	4	106
Memphis	69	20. 6	16. 9	14	4	
Milwaukee	113	11. 7	11. 6	27	19	123
Minneapolis	102	12. 5	12. 7	8	11	43
Nashville[3]	39	14. 9	16. 5	5	2	
New Bedford	24	9. 3	9. 0	5	2	83
New Haven	70	20. 4	8. 0	4	8	52
New Orleans	156	19. 6	15. 5	24	12	
New York	1, 598	13. 7	12. 4	200	185	80
Bronx Borough	181	10. 5	9. 3	15	14	52
Brooklyn Borough	564	13. 2	11. 3	81	64	85
Manhattan Borough	688	15. 9	14. 7	85	82	85
Queens Borough	127	11. 5	10. 2	16	19	79
Richmond Borough	38	14. 8	21. 5	3	6	54

[1] Annual rate per 1,000 population.

[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.

[3] Deaths for week ended Friday, June 5, 1925.

Deaths from all causes in certain large cities of the United States during the week ended June 6, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, June 9, 1925, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended June 6, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended June 6, 1925
	Total deaths	Death rate		Week ended June 6, 1925	Corresponding week, 1924	
Newark, N. J	122	14.1	11.9	22	10	100
Norfolk	31			9	5	160
Oakland	44	9.0	11.2	8	6	94
Oklahoma City	21			3	1	
Omaha	38	9.4	10.3	6	4	58
Paterson	40	14.7	12.2	9	4	151
Philadelphia	504	13.3	12.3	54	54	68
Pittsburgh	218	18.0	14.7	25	22	88
Portland, Oreg	63	11.6	13.3	3	4	31
Providence	72	15.3	14.5	6	8	48
Richmond	64	17.9	16.7	4	7	49
Rochester	70	11.0	8.8	3	8	24
St. Louis	210	13.3	13.7	15	15	
St. Paul	57	12.1	9.6	4	6	34
Salt Lake City [1]	22	8.8	10.5	2	5	31
San Antonio	54	14.2	20.2	16	16	
San Francisco	153	14.3	14.8	6	6	35
Schenectady	26	13.3	9.9	4	1	113
Seattle	79			5	1	51
Somerville	32	16.4	12.5	5	1	134
Spokane	27	12.9	12.5	3	2	65
Springfield, Mass	39	13.3	10.9	6	6	89
Syracuse	36	9.8	13.9	4	6	50
Tacoma	27	13.5	9.6	2	3	48
Toledo	90	16.3	12.5	12	5	109
Trenton	42	16.6	12.5	3	2	49
Washington, D. C	191	20.0	9.5	29	6	163
Waterbury	27			1	0	22
Wilmington, Del	29	12.4	10.0	6	4	137
Worcester	50	13.1	11.2	4	1	46
Yonkers	28	13.1	9.0	4	1	88
Youngstown	36	11.7	9.1	3	3	38

[1] Deaths for week ended Friday, June 5, 1925.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended June 13, 1925

ALABAMA

	Cases
Cerebrospinal meningitis	3
Chicken pox	24
Diphtheria	7
Dysentery	61
Influenza	25
Malaria	87
Measles	12
Mumps	25
Pellagra	34
Pneumonia	39
Poliomyelitis	2
Scarlet fever	19
Smallpox	88
Tuberculosis	71
Typhoid fever	54
Whooping cough	53

ARIZONA

	Cases
Chicken pox	7
Measles	29
Mumps	4
Poliomyelitis	3
Scarlet fever	15
Tuberculosis	47
Whooping cough	9

ARKANSAS

	Cases
Chicken pox	18
Hookworm disease	3
Influenza	11
Malaria	151
Measles	4
Mumps	31
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pellagra	37
Poliomyelitis	1
Scarlet fever	2
Smallpox	5
Trachoma	2

ARKANSAS—continued

	Cases
Tuberculosis	15
Typhoid fever	21
Whooping cough	21

CALIFORNIA

	Cases
Cerebrospinal meningitis:	
Long Beach	1
Los Angeles	1
Diphtheria	91
Influenza	13
Lethargic encephalitis:	
Riverside	1
San Francisco	1
Measles	62
Poliomyelitis:	
Berkeley	1
Claremont	1
Long Beach	1
Los Angeles	3
Los Angeles County	3
Monrovia	1
Monterey	1
Oakland	1
San Diego	1
San Francisco	3
Scarlet fever	95
Smallpox:	
Glendale	8
Los Angeles	36
Los Angeles County	6
Oakland	12
Scattering	26
Typhoid fever	12

COLORADO

(Exclusive of Denver)

	Cases
Chicken pox	4
Diphtheria	6
Measles	5
Mumps	8

COLORADO—continued

	Cases
Pneumonia	5
Scarlet fever	7
Septic sore throat	1
Rocky Mountain spotted fever—Denver	1
Tuberculosis	27
Typhoid fever	1

CONNECTICUT

Cerebrospinal meningitis	1
Chicken pox	47
Diphtheria	31
German measles	40
Influenza	5
Lethargic encephalitis	2
Measles	279
Mumps	13
Ophthalmia neonatorum	2
Pneumonia (all forms)	43
Scarlet fever	35
Septic sore throat	1
Tetanus	1
Tuberculosis (all forms)	33
Typhoid fever	5
Whooping cough	119

DELAWARE

Chicken pox	5
Diphtheria	3
Measles	12
Pneumonia	1
Scarlet fever	1
Tuberculosis	9

FLORIDA

Diphtheria	10
Influenza	1
Malaria	5
Mumps	3
Paratyphoid fever	2
Pneumonia	1
Poliomyelitis	2
Scarlet fever	5
Smallpox	9
Tuberculosis	8
Typhoid fever	15
Whooping cough	6

GEORGIA

Chicken pox	12
Diphtheria	8
Dysentery	63
Influenza	42
Malaria	62
Measles	21
Mumps	25
Pellagra	10
Pneumonia	21
Scarlet fever	4
Septic sore throat	7
Smallpox	32
Tuberculosis	24
Typhoid fever	69
Whooping cough	33

ILLINOIS

	Cases
Cerebrospinal meningitis—Cook County	1
Diphtheria:	
Cook County	59
Scattering	21
Influenza	11
Measles	1,215
Pneumonia:	
Chicago	140
Scattering	51
Poliomyelitis	
Kane County	1
Williamson County	1
Scarlet fever.	
Cook County	147
Kane County	7
McLean County	7
Sangamon County	6
Scattering	40
Smallpox:	
Cook County	8
Franklin County	17
Pulaski County	5
Vermilion County	5
Scattering	15
Tuberculosis	189
Typhoid fever:	
Cook County	7
Fayette County	9
Scattering	18
Whooping cough	239

INDIANA

Cerebrospinal meningitis—Union County	1
Chicken pox	86
Diphtheria	16
Influenza	23
Measles	156
Pneumonia	2
Scarlet fever	33
Smallpox	80
Tuberculosis	70
Typhoid fever	7
Whooping cough	49

IOWA

Diphtheria	14
Scarlet fever	9
Smallpox	6
Typhoid fever	1

KANSAS

Cerebrospinal meningitis	1
Chicken pox	71
Diphtheria	12
German measles	3
Influenza	22
Measles	14
Mumps	103
Pneumonia	36
Rabies	1
Scabies	1
Scarlet fever	39

KANSAS—continued

	Cases
Smallpox	9
Tetanus	1
Tuberculosis	45
Typhoid fever	5
Whooping cough	105

LOUISIANA

Diphtheria	11
Influenza	16
Lethargic encephalitis	2
Malaria	9
Pneumonia	32
Scarlet fever	7
Smallpox	9
Tuberculosis	35
Typhoid fever	55
Whooping cough	15

MAINE

Cerebrospinal meningitis	1
Chicken pox	7
Dysentery	1
German measles	5
Measles	8
Mumps	20
Pneumonia	2
Scarlet fever	13
Tuberculosis	4
Typhoid fever	1
Whooping cough	8

MARYLAND [1]

Chicken pox	130
Diarrhea and enteritis	2
Diphtheria	17
German measles	2
Influenza	4
Lethargic encephalitis	1
Measles	57
Mumps	70
Paratyphoid fever	3
Pneumonia:	
Broncho	15
Lobar	22
Poliomyelitis	2
Scarlet fever	22
Septic sore throat	3
Tetanus	2
Tuberculosis	86
Typhoid fever	10
Whooping cough	108

MASSACHUSETTS

Cerebrospinal meningitis	2
Chicken pox	152
Conjunctivitis (suppurative)	12
Diphtheria	68
German measles	288
Influenza	5
Measles	881
Mumps	30
Ophthalmia neonatorum	28
Pneumonia (lobar)	77
Scarlet fever	114

[1] Week ended Friday.

MASSACHUSETTS—continued

	Cases
Septic sore throat	1
Tetanus	1
Trachoma	1
Tuberculosis (pulmonary)	125
Tuberculosis (other forms)	17
Typhoid fever	8
Whooping cough	107

MICHIGAN

Diphtheria	67
Measles	786
Pneumonia	111
Scarlet fever	175
Smallpox	39
Tuberculosis	54
Typhoid fever	6
Whooping cough	236

MINNESOTA

Chicken pox	135
Diphtheria	49
Measles	44
Pneumonia	2
Scarlet fever	151
Smallpox	5
Tuberculosis	40
Typhoid fever	3
Whooping cough	24

MISSISSIPPI

Diphtheria	6
Scarlet fever	2
Smallpox	18
Typhoid fever	20

MISSOURI

(Exclusive of Kansas City)

Chicken pox	52
Diphtheria	49
Influenza	6
Measles	25
Mumps	36
Pneumonia	4
Rabies	3
Scarlet fever	116
Septic sore throat	3
Smallpox	26
Tetanus	1
Trachoma	3
Tuberculosis	58
Typhoid fever	8
Whooping cough	47

MONTANA

Chicken pox	4
Diphtheria	8
German measles	11
Mumps	8
Rocky Mountain spotted fever—Miles City	1
Scarlet fever	21
Septic sore throat	1
Smallpox	3
Tuberculosis	2
Typhoid fever	1
Whooping cough	11

NEBRASKA

	Cases
Chicken pox	13
Diphtheria	4
Measles	3
Mumps	4
Scarlet fever	6
Smallpox	31
Tuberculosis	1
Whooping cough	9

NEW JERSEY

Cerebrospinal meningitis	3
Chicken pox	165
Diphtheria	58
Influenza	3
Measles	487
Pneumonia	96
Scarlet fever	120
Smallpox	7
Typhoid fever	50
Whooping cough	189

NEW MEXICO

Chicken pox	1
Diphtheria	3
Measles	5
Mumps	11
Pneumonia	1
Puerperal septicemia	6
Rabies in animals	2
Scarlet fever	1
Tuberculosis	16
Typhoid fever	6
Whooping cough	9

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	1
Diphtheria	90
Influenza	15
Lethargic encephalitis	1
Measles	728
Pneumonia	164
Poliomyelitis	3
Scarlet fever	192
Smallpox	11
Typhoid fever	21
Whooping cough	215

NORTH CAROLINA

Cerebrospinal meningitis	2
Chicken pox	68
Diphtheria	18
German measles	2
Measles	4
Poliomyelitis	6
Scarlet fever	12
Smallpox	37
Typhoid fever	36
Whooping cough	159

OKLAHOMA

(Exclusive of Oklahoma City and Tulsa)

Cerebrospinal meningitis—Okmulgee	1
Chicken pox	14
Diphtheria	9

[1] Deaths.

OKLAHOMA—continued

	Cases
Influenza	27
Poliomyelitis—Bryan	2
Scarlet fever	12
Smallpox	6
Typhoid fever	38
Whooping cough	23

OREGON

Cerebrospinal meningitis	4
Chicken pox	16
Diphtheria	
Portland	14
Scattering	4
Influenza	1
Malaria	1
Measles	1
Mumps	13
Pneumonia	[1] 2
Rocky Mountain spotted fever	1
Scarlet fever	13
Smallpox	8
Tuberculosis	8
Typhoid fever	1
Whooping cough	19

SOUTH DAKOTA

Diphtheria	3
Mumps	1
Pneumonia	1
Scarlet fever	16
Tuberculosis	3
Typhoid fever	1
Whooping cough	8

TEXAS

Cerebrospinal meningitis	1
Chicken pox	20
Diphtheria	8
Dysentery (epidemic)	58
Influenza	20
Measles	14
Mumps	32
Pellagra	33
Pneumonia	4
Poliomyelitis	4
Rabies in man	1
Scarlet fever	10
Smallpox	13
Trachoma	5
Tuberculosis	16
Typhoid fever	14
Whooping cough	47

VERMONT

Chicken pox	26
Diphtheria	1
Measles	47
Mumps	62
Scarlet fever	7
Whooping cough	24

VIRGINIA

Smallpox:	
Accomac County	2
Craig County	2

WASHINGTON

	Cases
Chicken pox	60
Diphtheria	18
German measles	16
Measles	5
Mumps	49
Scarlet fever	30
Smallpox	34
Tuberculosis	51
Typhoid fever	3
Whooping cough	125

WEST VIRGINIA

	Cases
Diphtheria	1
Scarlet fever	15
Smallpox	3
Typhoid fever	2

WISCONSIN

	Cases
Milwaukee	
Chicken pox	42
Diphtheria	11
German measles	36
Measles	145
Mumps	52
Pneumonia	9
Scarlet fever	6
Smallpox	6

WISCONSIN—continued

	Cases
Milwaukee—Continued.	
Tuberculosis	26
Whooping cough	83
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	146
Diphtheria	30
German measles	188
Influenza	47
Lethargic encephalitis	1
Measles	221
Mumps	67
Pneumonia	15
Scarlet fever	146
Smallpox	32
Tuberculosis	27
Whooping cough	82

WYOMING

	Cases
Chicken pox	15
Diphtheria	5
Mumps	4
Rocky Mountain spotted fever	3
Scarlet fever	10
Smallpox	1
Typhoid fever	1
Whooping cough	3

Reports for Week Ended June 6, 1925

DISTRICT OF COLUMBIA

	Cases
Chicken pox	9
Diphtheria	10
Measles	27
Pneumonia	9
Scarlet fever	22
Smallpox	1
Tuberculosis	23
Whooping cough	15

MISSOURI

(Exclusive of Kansas City)

	Cases
Cerebrospinal meningitis	2
Chicken pox	38
Diphtheria	59
Influenza	4
Measles	10
Mumps	71
Ophthalmia neonatorum	1
Pneumonia	10
Rabies	1
Scarlet fever	135
Smallpox	23
Trachoma	4
Tuberculosis	59
Typhoid fever	8
Whooping cough	29

NEBRASKA

	Cases
Chicken pox	20
Diphtheria	6
Measles	2
Mumps	6
Scarlet fever	6
Smallpox	26

NEBRASKA—continued

	Cases
Tuberculosis	2
Whooping cough	18

NORTH DAKOTA

	Cases
Chicken pox	16
Diphtheria	1
German measles	1
Mumps	18
Pneumonia	3
Poliomyelitis	4
Scarlet fever	20
Smallpox	6
Whooping cough	6

TEXAS

	Cases
Cerebrospinal meningitis	1
Chicken pox	111
Dengue fever	1
Diphtheria	24
Dysentery (epidemic)	12
Influenza	20
Measles	34
Mumps	69
Pappataci fever	5
Paratyphoid fever	3
Pellagra	12
Pneumonia	8
Rabies in man	2
Scarlet fever	45
Smallpox	97
Trachoma	2
Tuberculosis	44
Typhoid fever	29
Typhus fever	1
Whooping cough	51

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
May, 1925										
Arkansas	0	9	175	320	110	97	0	12	18	44
Connecticut	4	103	22		985		1	364	2	19
Indiana	3	84	257				1	703		39
Michigan	0	239	35	1	2,331	0	6	1,321	86	33
Missouri	2	330	36	34	142	0	0	799	93	20
Vermont	0	12	0	0	52	0	0	41	0	0
Wisconsin	3	140	778	0	1,718	0	3	541	243	9

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named:

Los Angeles, Calif.

Week ended May 30, 1925:
- Number of rats examined — 2,542
- Number of rats found to be plague infected — 0
- Number of squirrels examined — 1,170
- Number of squirrels found to be plague infected — 0

Totals, Nov. 5, 1924, to May 30, 1925:
- Number of rats examined — 106,951
- Number of rats found to be plague infected — 187
- Number of squirrels examined — 16,094
- Number of squirrels found to be plague infected — 9

Date of discovery of last plague-infected rodent, May 26, 1925.
Date of last human case, Jan. 15, 1925.

Oakland, Calif.

(Including other East Bay communities)

Week ended May 30, 1925:
- Number of rats trapped — 1,739
- Number of rats found to be plague infected — 0
- Number of squirrels examined — 712
- Number of squirrels found to be plague infected — 0

Totals:
- Number of rats trapped Jan. 1 to May 30, 1925 — 49,820
- Number of rats found to be plague infected — 21
- Number of squirrels examined May 1 to May 30, 1925 — 1,985
- Number of squirrels found to be plague infected — 0

Date of discovery of last plague-infected rat, Mar. 4, 1925.
Date of last human case, Sept. 10, 1919.

New Orleans, La.

Week ended May 30, 1925:	
Number of vessels inspected	353
Number of inspections made	1,021
Number of vessels fumigated with cyanide gas	22
Number of rodents examined for plague	5,015
Number of rodents found to be plague infected	0
Totals, Dec. 5, 1924, to May 30, 1925:	
Number of rodents examined for plague	113,660
Number of rodents found to be plague infected	12

Date of discovery of last plague-infected rat, Jan. 17, 1925.
Date of last human case occurring in New Orleans, Aug. 20, 1920.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended May 30, 1925, 34 States reported 1,019 cases of diphtheria. For the week ended May 31, 1924, the same States reported 1,384 cases of this disease. Ninety-eight cities, situated in all parts of the country and having an aggregate population of more than 28,100,000, reported 819 cases of diphtheria for the week ended May 30, 1925. Last year, for the corresponding week, they reported 859 cases. The estimated expectancy for these cities was 807 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty-one States reported 4,987 cases of measles for the week ended May 30, 1925, and 7,778 cases of this disease for the week ended May 31, 1924. Ninety-eight cities reported 3,238 cases of measles for the week this year, and 2,843 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 34 States—this year, 2,549 cases; last year, 2,391 cases; 98 cities—this year, 1,521; last year, 1,189; estimated expectancy, 875 cases.

Smallpox.—For the week ended May 30, 1925, 34 States reported 738 cases of smallpox. Last year, for the corresponding week, they reported 858 cases. Ninety-eight cities reported smallpox for the week as follows: 1925, 243 cases; 1924, 289 cases; estimated expectancy, 115 cases. These cities reported 10 deaths from smallpox for the week this year.

Typhoid fever.—Three hundred and forty-eight cases of typhoid fever were reported for the week ended May 30, 1925, by 33 States. For the corresponding week of 1924 the same States reported 237 cases. Ninety-eight cities reported 86 cases of typhoid fever for the week this year, and 76 cases for the corresponding week last year. The estimated expectancy for these cities was 78 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 98 cities as follows: 1925, 732 deaths; 1924, 643 deaths.

City reports for week ended May 30, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	78,120	8	1	0	0	0	0	11	2
New Hampshire:									
Concord	22,408	0	0	0	0	0	1	0	1
Vermont:									
Barre	[1] 10,008	1	0	0	0	0	0	8	1
Burlington	23,613	2	1	0	0	0	5	5	1
Massachusetts:									
Boston	770,400	...	54	29	3	1	235	...	20
Fall River	120,912	1	3	2	0	0	2	0	2
Springfield	144,227	3	3	1	1	1	8	12	0
Worcester	191,927	0	4	2	0	0	16	0	5
Rhode Island:									
Pawtucket	68,799	3	1	0	0	0	1	0	0
Providence	242,378	0	10	2	0	1	2	0	12
Connecticut									
Bridgeport	[1] 143,555	6	4	3	0	0	15	1	1
Hartford	[1] 138,036	...	6	...	...	...	...	...	...
New Haven	172,967	1	4	1	0	0	63	0	1
MIDDLE ATLANTIC									
New York:									
Buffalo	536,718	5	13	10	3	0	252	1	14
New York	5,927,625	257	254	237	15	13	213	31	162
Rochester	317,867	1	7	4	...	0	90	2	10
Syracuse	184,511	17	7	7	...	0	13	15	3
New Jersey:									
Camden	124,157	1	3	6	...	0	31	1	5
Newark	438,699	33	15	14	2	0	91	8	16
Trenton	127,390	17	5	0	0	0	3	0	5
Pennsylvania:									
Philadelphia	1,922,788	54	62	130	...	2	315	18	55
Pittsburgh	613,442	15	21	4	...	3	258	6	17
Reading	110,917	0	2	4	0	0	96	10	1
Scranton	140,636	1	3	0	0	1	0	0	5
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406,312	7	8	9	...	5	1	2	8
Cleveland	888,519	95	20	25	1	2	18	9	13
Columbus	261,082	3	3	4	...	4	9	0	6
Toledo	268,338	31	4	6	...	1	122	0	3
Indiana:									
Fort Wayne	93,573	4	2	0	0	0	7	0	1
Indianapolis	342,718	...	6	...	...	...	...	...	...
South Bend	76,709	6	1	3	0	0	5	0	1
Terre Haute	68,939	4	1	1	0	0	47	0	2
Illinois:									
Chicago	2,886,121	83	99	60	9	4	645	16	59
Cicero	55,968	...	2	...	...	...	...	...	...
Springfield	61,833	10	1	2	0	0	43	[illegible]	2
Michigan:									
Detroit	995,668	61	45	24	2	3	28	19	35
Flint	117,968	2	4	0	0	0	36	0	1
Grand Rapids	145,947	2	2	0	0	0	132	0	4

[1] Population Jan. 1, 1920.

City reports for week ended May 30, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST NORTH CENTRAL—continued									
Wisconsin									
Madison	42,519	4	0	0	0	0	4	9	1
Milwaukee	484,595	22	11	12	0	0	211	64	21
Racine	64,393	6	1	3	0	0	0	5	2
Superior	[1] 39,671	0	1	0	0		0	0	
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	7	1	0	0	0	0	1	2
Minneapolis	409,125	48	14	22		1	22	4	4
St. Paul	241,891	45	14	9	0	0	14	32	5
Iowa:									
Davenport	61,262	0	1	1	0		3	0	
Sioux City	79,662	11	1	1	0		1	10	
Waterloo	39,667	8	0	0	0		1	0	
Missouri:									
Kansas City	351,819	17	6	2	4	4	5	16	7
St. Joseph	78,232	1	1	0	0	0	0	0	1
St. Louis	803,853	30	38	51	1	1	20	6	
North Dakota:									
Fargo	24,841	1	0	0	0	1	0	9	0
Grand Forks	14,547	2	1	0	0		0	0	
South Dakota:									
Sioux Falls	29,206	0	0	0	0	0	1	0	0
Nebraska:									
Lincoln	58,761	4	1	2		0	2	1	0
Omaha	204,382	15	3	3	0	0	1	0	5
Kansas:									
Topeka	52,555	1	1	1	0	1	2	26	2
Wichita	79,261	7	1	4	0	0	1	0	1
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	0	1	0	0	0	8	0	1
Maryland:									
Baltimore	773,580	96	17	21	7	3	20	54	39
Cumberland	32,361	0	1	0	2	0	0	0	1
Frederick	11,301	0	0	0	0	0	0	0	0
District of Columbia:									
Washington	[1] 437,571	9	9	12	1	1	28		12
Virginia:									
Lynchburg	30,277	3	0	1	0	0	0	10	1
Norfolk	159,089	5	0	0	0	0	1	4	3
Richmond	181,044	4	1	1	0	0	18	3	4
Roanoke	55,502	2	1	0	0	0	25	0	1
West Virginia:									
Charleston	45,597		1						
Huntington	57,918	0	0	0	0		0	0	
Wheeling	[1] 56,208	0	1	0		0	16	0	0
North Carolina:									
Raleigh	29,171	5	1	0	0	0	0	0	1
Wilmington	35,719	1	0	0	0	0	0	3	2
Winston-Salem	56,230	8	0	1	0	0	4	3	1
South Carolina:									
Charleston	71,245	0	1	0	0	1	0	0	1
Columbia	39,688	2	1	0	0	0	0	2	0
Greenville	25,789	0	0	0	0	0	0	0	0
Georgia:									
Atlanta	222,963	10	1	1	16	0	1	3	4
Brunswick	15,937	8	0	0	0	0	0	1	0
Savannah	89,448	3	0	0	1	1	3	0	0
Florida:									
St. Petersburg	24,403	0	0	0	0	0	0	0	1
Tampa	56,050	0	1	0	0	0	0	0	4

[1] Population Jan. 1, 1920.

City reports for week ended May 30, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	1	1	0		0	0	0	2
Louisville	257,671	2	3	1	6	1	3	0	7
Tennessee:									
Memphis	170,067	5	2	0		0	18	1	7
Nashville	121,128	3	0	0		2	16	0	4
Alabama:									
Birmingham	195,901	7	1	1	15	3	1	1	9
Mobile	63,858	1	1	0		1	0	0	1
Montgomery	45,383		0						
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	0	0	0	0		0	1	
Little Rock	70,916	2	1	0	0		1	1	
Louisiana:									
New Orleans	404,575	3	6	10	5	3	0	0	9
Shreveport	54,590	0		0	0	1	0	0	1
Oklahoma:									
Oklahoma	101,150	3	1	2	0	0	2	0	2
Texas:									
Dallas	177,274	31	3	3	0	2	2	1	1
Galveston	46,877	0	1	0	0	0	0	0	0
Houston	154,970	2	2	1	0	0	0	0	2
San Antonio	184,727	1	1	0		0	0	0	2
MOUNTAIN									
Montana:									
Billings	16,927	0	0	0	0	0	3	18	0
Great Falls	27,787	0	1	0	0	0	0	4	0
Helena	[1] 12,037	0	0	0	0	0	0	0	0
Missoula	[1] 12,668	0	0	0	0	0	0	0	0
Idaho:									
Boise	22,806	1	0	0	0	0	0	0	0
Colorado:									
Denver	272,031	15	10	12	7	0	22	0	5
Pueblo	43,519	0	1	1	0	0	0	3	3
New Mexico:									
Albuquerque	16,648	0	1	0	0	0	0	1	0
Arizona:									
Phoenix	33,899	0		1	0	0	1	0	1
Utah:									
Salt Lake City	126,241	21	3	2	0	0	1	23	0
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	19	4	1	0		3	40	
Spokane	104,573	5	2	3	0		0	0	
Tacoma	101,731	6	1	1	0	0	1	0	0
California:									
Los Angeles	666,853		34	32	9	2	40		15
Sacramento	69,950	9	2	5	0	0	0	0	2
San Francisco	539,038	36	23	16	1	0	13	39	3

[1] Population Jan. 1, 1920.

City reports for week ended May 30, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	1	3	0	0	0	1	1	0	0	0	20
New Hampshire:											
Concord	1	0	0	0	0	1	0	0	0	0	10
Vermont:											
Barre	1	0	0	0	0	3	0	0	0	0	4
Burlington	0	0	0	0	0	0	0	0	0	0	12
Massachusetts:											
Boston	45	24	0	0	0	18	2	2	1		208
Fall River	2	2	0	0	0	3	1	0	0	5	32
Springfield	5	19	0	0	0	1	0	0	0	13	34
Worcester	6	3	0	0	0	2	0	1	0	2	54
Rhode Island:											
Pawtucket	1	5	0	0	0	0	0	0	0	0	14
Providence	10	8	0	0	0	5	0	1	0	2	66
Connecticut:											
Bridgeport	5	13	0	0	0	4	0	1	0	6	24
Hartford	3		0				1				
New Haven	4	4	0	0	0	0	1	1	0	30	25
MIDDLE ATLANTIC											
New York:											
Buffalo	19	21	1	1	0	5	0	1	0	26	113
New York	182	233	0	1	0	[1] 104	12	12	2	125	1,398
Rochester	11	17	0	0	0	2	0	0	0	12	86
Syracuse	11	5	0	0	0	0	1	0	0	3	25
New Jersey:											
Camden	2	6	0	0	0	1	1	0	0	9	43
Newark	15	19	0	0	0	16	0	0	0	26	108
Trenton	2	1	0	0	0	3	1	0	0	3	43
Pennsylvania:											
Philadelphia	67	131	1	2	0	39	6	4	1	64	518
Pittsburgh	21	84	1	0	0	7	1	0	0	8	148
Reading	2	18	0	0	0	0	1	0	0	4	36
Scranton	2	0	0	0	0	0	1	0	0	2	
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	9	23	2	3	0	8	0	1	0	5	113
Cleveland	18	10	1	0	0	17	1	1	0	31	152
Columbus	4	15	2	8	0	7	0	1	0	15	70
Toledo	12	11	3	0	0	5	1	0	0	12	72
Indiana:											
Fort Wayne	1	10	2	0	0	2	0	0	0	4	19
Indianapolis	12		6				1				
South Bend	3	7	1	0	0	1	0	0	0	2	14
Terre Haute	2	6	1	8	0	0	0	0	0	0	19
Illinois:											
Chicago	67	196	2	6	0	50	3	5	0	104	699
Cicero	1		0				0				
Springfield	2	0	0	0	0	0	0	1	0	0	18
Michigan:											
Detroit	67	94	10	0	0	30	3	1	0	89	231
Flint	5	10	1	2	0	0	1	0	0	7	18
Grand Rapids	6	46	1	0	0	2	1	0	0	9	32
Wisconsin:											
Madison	2	4	1	0	0	0	0	0	0	16	10
Milwaukee	25	21	2	26	8	5	1	0	0	30	130
Racine	4	5	1	2	0	1	0	0	0	0	11
Superior	1	0	2	0	0	0	1	0	0	0	0

[1] Pulmonary tuberculosis only.

City reports for week ended May 30, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST NORTH CENTRAL											
Minnesota:											
Duluth	3	18	2	0	0	0	1	0	0	2	18
Minneapolis	27	101	8	8	1	4	1	3	0	2	77
St. Paul	17	32	5	0	1	4	0	1	0	33	44
Iowa:											
Davenport	1	1	5	0	------	------	0	0	------	1	------
Sioux City	2	0	1	0	------	------	0	0	------	0	------
Waterloo	3	0	0	1	------	------	1	0	------	10	------
Missouri:											
Kansas City	7	22	3	0	0	3	1	0	0	6	72
St. Joseph	1	1	0	0	0	3	0	0	0	2	31
St. Louis	26	80	1	5	0	10	2	1	0	12	211
North Dakota:											
Fargo	0	2	0	0	0	0	0	0	0	0	5
Grand Forks	0	0	0	0	------	------	0	0	------	0	------
South Dakota:											
Sioux Falls	1	0	1	0	0	0	0	0	0	0	3
Nebraska:											
Lincoln	2	0	0	0	0	0	0	0	0	11	7
Omaha	4	0	2	20	0	2	0	0	0	2	67
Kansas:											
Topeka	1	0	1	0	0	0	0	0	0	2	16
Wichita	2	0	3	0	0	0	0	0	0	26	36
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	3	0	0	0	0	1	0	0	1	20
Maryland:											
Baltimore	24	29	1	0	0	19	3	0	0	114	235
Cumberland	1	0	0	0	0	2	0	0	0	0	18
Frederick	1	0	0	0	0	0	0	0	0	0	3
District of Columbia:											
Washington	15	17	2	0	0	11	2	3	0	19	144
Virginia:											
Lynchburg	1	0	0	0	0	0	0	0	0	6	7
Norfolk	1	0	0	0	0	2	1	0	0	13	------
Richmond	2	3	1	0	0	4	0	1	0	1	53
Roanoke	1	3	1	0	0	0	0	1	0	4	18
West Virginia:											
Charleston	1	------	0	------	------	------	0	------	------	------	------
Huntington	1	4	0	2	------	------	1	0	------	0	------
Wheeling	1	3	0	0	0	1	1	1	0	0	22
North Carolina:											
Raleigh	0	0	0	0	0	0	0	0	0	1	8
Wilmington	0	0	0	1	0	0	1	0	0	3	13
Winston-Salem	1	0	1	3	0	2	0	0	0	9	14
South Carolina:											
Charleston	0	0	0	1	0	2	0	6	1	1	24
Columbia	0	0	0	0	0	0	1	1	0	4	------
Greenville	0	0	0	0	0	0	1	1	0	0	9
Georgia:											
Atlanta	4	1	6	0	0	11	1	5	2	4	88
Brunswick	1	0	0	0	0	0	1	0	0	0	4
Savannah	0	0	0	0	0	2	1	1	0	2	29
Florida:											
St. Petersburg	1	0	0	0	0	0	0	0	0	0	8
Tampa	1	0	0	0	0	0	0	0	0	------	20
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	1	1	2	0	1	0	0	0	1	17
Louisville	3	6	0	6	0	7	1	1	0	[illegible]	59
Tennessee:											
Memphis	4	6	1	6	0	4	1	2	1	20	60
Nashville	2	3	1	13	0	3	1	3	0	2	40
Alabama:											
Birmingham	1	16	1	46	0	6	2	2	1	6	75
Mobile	0	0	1	0	0	0	1	0	1	0	21
Montgomery	1	------	1	------	------	------	0	------	------	------	------

City reports for week ended May 30, 1925—**Continued**

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	0	0	0	-------	-------	0	0	-------	17	-------
Little Rock	1	0	0	0	0	0	1	3	0	0	-------
Louisiana:											
New Orleans	2	6	3	1	0	21	3	8	1	15	145
Shreveport	0	0	0	1	0	0	0	0	0	0	21
Oklahoma:											
Oklahoma	2	1	6	0	0	0	0	2	0	2	27
Texas:											
Dallas	1	5	2	7	0	3	1	2	1	5	65
Galveston	1	0	0	1	0	1	1	0	0	0	9
Houston	1	3	0	2	0	5	0	1	0	0	42
San Antonio	0	0	0	0	0	15	0	0	0	0	61
MOUNTAIN											
Montana:											
Billings	0	2	0	0	0	0	0	0	0	1	4
Great Falls	2	19	2	4	0	0	0	0	0	0	11
Helena	0	1	0	0	0	0	0	0	0	0	1
Missoula	1	3	0	0	0	0	0	0	0	0	3
Idaho:											
Boise	1	0	1	0	0	0	0	0	0	1	-------
Colorado:											
Denver	10	12	1	0	0	4	1	0	1	5	71
Pueblo	1	2	1	0	0	3	1	0	0	1	8
New Mexico:											
Albuquerque	0	0	0	0	0	3	0	0	0	0	5
Arizona:											
Phoenix	-------	0	-------	0	0	4	-------	0	0	1	15
Utah:											
Salt Lake City	2	3	1	0	0	2	0	1	0	7	31
Nevada:											
Reno	0	1	1	2	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle	7	8	2	8	-------	-------	0	0	-------	81	-------
Spokane	4	0	5	1	-------	-------	0	1	-------	4	-------
Tacoma	2	3	2	4	0	0	0	0	0	9	15
California:											
Los Angeles	12	22	1	40	0	21	2	1	0	-------	187
Sacramento	1	1	0	5	0	4	1	1	1	0	22
San Francisco	15	14	1	0	0	8	0	0	0	53	117

City reports for week ended May 30, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	Cases	Deaths
NEW ENGLAND											
Massachusetts:											
Boston	1	1	0	0	0	0	0	1	0	0	0
Fall River	0	0	1	1	0	0	0	0	0	0	0
Worcester	0	0	1	0	0	0	0	0	0	0	0
Rhode Island:											
Providence	0	0	0	0	0	0	0	1	0	0	0
Connecticut:											
New Haven	1	0	0	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC											
New York											
New York	4	2	5	3	0	0	1	1	1	1	0
New Jersey:											
Newark	0	0	1	0	0	0	1	0	0	0	0
Pennsylvania:											
Philadelphia	1	1	1	1	0	0	1	0	0	0	0
EAST NORTH CENTRAL											
Ohio:											
Cleveland	1	0	0	1	0	0	0	0	0	0	0
Illinois:											
Chicago			1								
Michigan:											
Detroit	1	1	1	1	0	0	0	0	0	0	0
Wisconsin:											
Milwaukee	2	2	0	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL											
Missouri:											
St. Louis	0	1	0	0	0	0	0	0	0	0	0
SOUTH ATLANTIC											
Maryland:											
Baltimore	1	0	2	0	0	0	0	0	0	0	0
Virginia:											
Norfolk	0	0	0	0	0	1	0	0	0	0	0
North Carolina:											
Wilmington	0	0	0	0	0	0	0	0	0	1	0
Winston-Salem	0	0	0	0	1	1	0	0	0	0	0
South Carolina:											
Charleston	0	0	1	1	0	0	0	0	0	0	0
Georgia:											
Atlanta	0	0	0	0	2	1	0	0	0	0	0
Savannah	0	0	0	0	1	0	0	0	0	0	0
EAST SOUTH CENTRAL											
Alabama:											
Birmingham	0	0	1	0	0	0	0	0	0	0	0
Mobile	0	0	0	0	0	0	0	0	0	0	1
WEST SOUTH CENTRAL											
Arkansas:											
Little Rock	0		0		0	1	0	0	0	0	0
Louisiana:											
New Orleans	0	0	0	0	4	5	0	0	0	0	0
Shreveport	0	0	0	0	0	3	0	0	0	0	0
Oklahoma:											
Oklahoma	0	0	0	1	0	0	0	0	0	0	0
Texas:											
Dallas	0	0	0	0	1	1	0	0	0	0	0
Galveston	0	0	0	0	0	1	0	0	0	0	0
Houston	0	0	0	0	0	2	0	0	0	1	0
San Antonio	0	0	0	0	0	1	0	0	0	0	0

City reports for week ended May 30, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	Cases	Deaths
MOUNTAIN											
Arizona:											
Phoenix	0	0	0	0	0	0		2	1	0	0
Utah											
Salt Lake City	0	1	0	0	0	0	0	0	0	0	0
PACIFIC											
California:											
Los Angeles	1	0	0	0	0	0	0	2	0	0	0
Sacramento	0	0	0	0	0	0	0	1	0	0	0
San Francisco	2	1	0	0	0	0	0	1	1	0	0

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended May 30, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000, and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, March 22 to May 30, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23	May 30
105 cities	[2] 168	177	158	160	162	158	[2] 157	[3] 164	[4] 153	[5] 151
New England	119	171	166	129	144	127	109	154	127	[6] 106
Middle Atlantic	231	241	220	228	218	213	212	238	203	211
East North Central	112	93	96	110	113	110	113	110	[4] 108	[7] 112
West North Central	247	220	226	168	187	201	278	[8] 212	251	197
South Atlantic	95	81	73	102	108	104	104	85	87	[9] 77
East South Central	57	23	34	46	40	40	11	34	40	[10] 12
West South Central	121	83	107	74	79	70	65	56	42	65
Mountain	134	124	105	239	267	115	105	153	134	143
Pacific	[2] 170	374	171	168	165	206	[2] 123	[11] 138	165	168

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.
[2] Spokane, Wash., not included. Report not received at time of going to press.
[3] Sioux Falls, S. Dak., and Tacoma, Wash., not included.
[4] Cicero, Ill., not included.
[5] Hartford, Conn.; Indianapolis, Ind.; Cicero, Ill.; Charleston, W. Va.; and Montgomery, Ala., not included.
[6] Hartford, Conn., not included.
[7] Cicero, Ill., and Indianapolis, Ind., not included.
[8] Sioux Falls, S. Dak., not included.
[9] Charleston, W. Va., not included.
[10] Montgomery, Ala., not included.
[11] Tacoma, Wash., not included.

***Summary of weekly reports from cities, March 22 to May 30, 1925—Annual rates per 100,000 population*—Continued**

	Week ended—									
	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23	May 30
MEASLES CASE RATES										
105 cities	[2] 507	558	531	589	645	581	[2] 627	[3] 624	[4] 600	[5] 597
New England	755	957	1,011	917	1,217	1,004	984	1,188	1,051	[6] 912
Middle Atlantic	633	734	680	815	782	734	797	768	617	704
East North Central	798	736	710	742	901	761	890	854	[4] 953	[7] 932
West North Central	89	77	58	91	102	79	112	[8] 80	236	145
South Atlantic	136	209	207	256	295	305	240	329	327	[9] 256
East South Central	34	69	34	97	189	200	343	166	337	[10] 229
West South Central	9	88	51	65	37	28	32	14	23	14
Mountain	38	219	57	267	219	534	181	57	181	248
Pacific	[2] 151	209	241	154	203	162	[2] 95	[11] 178	131	165
SCARLET FEVER CASE RATES										
105 cities	[2] 419	409	367	342	360	309	[2] 323	[3] 352	[4] 307	[5] 281
New England	604	534	529	350	407	430	415	358	350	[6] 215
Middle Atlantic	405	436	359	343	336	323	319	331	265	271
East North Central	483	442	422	403	433	324	366	399	[4] 416	[7] 358
West North Central	755	736	647	651	692	518	618	[8] 734	556	531
South Atlantic	167	175	152	167	175	132	106	165	146	[9] 122
East South Central	286	263	280	229	257	263	263	326	246	[10] 193
West South Central	102	51	88	60	121	111	88	74	23	65
Mountain	248	277	258	315	401	334	277	353	324	410
Pacific	[2] 222	191	174	145	148	125	[2] 151	[11] 197	162	139
SMALLPOX CASE RATES										
105 cities	[2] 58	57	51	48	62	50	[2] 46	[3] 46	[4] 61	[5] 46
New England	0	12	2	0	2	0	2	0	0	[6] 0
Middle Atlantic	7	21	10	18	12	8	6	7	2	2
East North Central	33	24	22	27	39	30	44	56	[4] 71	[7] 43
West North Central	135	87	97	85	89	75	60	[8] 80	68	70
South Atlantic	67	49	43	53	79	63	45	37	65	[9] 10
East South Central	423	42	572	395	457	435	377	189	440	[10] 439
West South Central	107	46	51	14	42	32	28	37	130	56
Mountain	19	19	19	10	29	10	48	29	29	57
Pacific	[2] 191	255	148	162	264	206	[2] 176	[11] 191	186	168
TYPHOID FEVER CASE RATES										
105 cities	[2] 11	9	10	12	16	18	[2] 14	[3] 13	[4] 19	[5] 16
New England	12	5	2	7	17	10	5	12	25	[6] 16
Middle Atlantic	7	4	9	11	14	22	13	10	19	9
East North Central	3	4	6	4	7	4	9	6	[4] 5	[7] 8
West North Central	6	2	2	2	6	12	2	[8] 0	4	10
South Atlantic	12	30	20	12	14	28	28	26	39	[9] 41
East South Central	57	17	17	34	80	46	46	63	74	[10] 48
West South Central	42	32	37	56	51	51	46	79	65	74
Mountain	0	0	19	38	29	0	0	0	19	10
Pacific	[2] 28	20	9	12	23	17	[2] 9	[11] 3	6	9

[2] Spokane, Wash., not included. Report not received at time of going to press.
[3] Sioux Falls, S. Dak., and Tacoma, Wash., not included.
[4] Cicero, Ill., not included.
[5] Hartford, Conn.; Indianapolis, Ind.; Cicero, Ill.; Charleston, W. Va.; and Montgomery, Ala., not included.
[6] Hartford, Conn., not included.
[7] Cicero, Ill., and Indianapolis, Ind., not included.
[8] Sioux Falls, S. Dak., not included.
[9] Charleston, W. Va., not included.
[10] Montgomery, Ala., not included.
[11] Tacoma, Wash., not included.

Summary of weekly reports from cities, March 22 to May 30, 1925—Annual rates per 100,000 population—Continued

INFLUENZA DEATH RATES

	Week ended—									
	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23	May 30
105 cities	33	34	27	27	30	22	15	[3] 14	[4] 14	[5] 13
New England	30	35	32	27	30	20	10	7	5	[6] 8
Middle Atlantic	22	21	16	24	17	14	10	12	11	9
East North Central	40	38	27	24	33	23	16	11	[4] 12	[7] 14
West North Central	46	39	37	50	48	31	11	[8] 11	18	18
South Atlantic	12	28	26	12	43	26	24	10	6	[9] 12
East South Central	86	69	74	80	86	51	51	80	86	[10] 42
West South Central	36	36	46	36	25	31	15	20	24	31
Mountain	38	181	86	38	76	48	19	57	19	0
Pacific	53	29	12	29	12	12	16	12	25	8

PNEUMONIA DEATH RATES

	Mar. 28	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23	May 30
105 cities	206	204	201	192	203	167	151	[3] 127	[4] 129	[5] 126
New England	219	251	211	206	186	149	161	134	119	[6] 120
Middle Atlantic	199	215	190	204	223	206	185	143	144	146
East North Central	214	182	190	190	211	148	130	125	[4] 125	[7] 123
West North Central	166	193	228	171	136	72	77	[8] 58	79	59
South Atlantic	252	234	238	232	191	195	156	136	134	[9] 157
East South Atlantic	269	260	343	206	286	194	160	166	137	[10] 181
West South Central	168	168	168	173	158	127	138	112	84	76
Mountain	200	162	267	210	219	124	124	162	172	76
Pacific	159	159	119	98	147	127	123	78	135	82

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28,898,350	28,140,934
New England	12	12	2,098,746	2,098,746
Middle Atlantic	10	10	10,304,114	10,304,114
East North Central	17	17	7,032,535	7,032,535
West North Central	14	11	2,515,330	2,381,454
South Atlantic	22	22	2,566,901	2,566,901
East South Central	7	7	911,885	911,885
West South Central	8	6	1,124,564	1,023,013
Mountain	9	9	546,445	546,445
Pacific	6	3	1,797,830	1,275,841

[3] Sioux Falls, S. Dak., and Tacoma, Wash., not included.
[4] Cicero, Ill., not included
[5] Hartford, Conn.; Indianapolis, Ind.; Cicero, Ill.; Charleston, W. Va.; and Montgomery, Ala., not included.
[6] Hartford, Conn., not included.
[7] Cicero, Ill., and Indianapolis, Ind., not included.
[8] Sioux Falls, S Dak., not included.
[9] Charleston, W Va., not included.
[10] Montgomery, Ala., not included.

FOREIGN AND INSULAR

THE FAR EAST

Wireless health news messages.—The following data, covering the two-week period May 10 to 23, 1925, were sent by wireless from the Far Eastern Bureau of the Health Section of the League of Nations, located at Singapore, to the headquarters at Geneva, Switzerland:

WEEK ENDED MAY 16, 1925

Port	Plague		Cholera		Smallpox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Calcutta	0	0		47	104	76
Bombay		11		1	25	13
Madras	0	0	0	0	26	16
Rangoon		7		4	35	24
Karachi		1	0	0	1	
Negapatam	0	0		1	0	0
Singapore [1]	1	1	0	0	0	0
Penang [2]						
Batavia	0	0	0	0	0	0
Soerabaya [3]	0	0	0	0	2	2
Samarang	0	0	0	0	0	0
Belawan Deli [2]						
Macassar	0	0	0	0	0	0
British North Borneo [3]						
Bangkok [1]	0	0	1	1	5	4
Saigon and Cholon	0	0	0	0	0	0
Hongkong	0	0	0	0	1	1
Shanghai [2]						
Nagasaki	0	0	0	0	5	
Manila	0	0	0	0	0	0
Kobe	0	0	0	0	0	0
Shimonoseki	0	0	0	0	0	0
Yokohama	0	0	0	0	0	0
Colombo	0	0	0	0	0	0

[1] Report not received this week.
[2] Infected rats found.
[3] No infected rats found.

WEEK ENDED MAY 23, 1925

Port	Plague cases	Plague deaths	Cholera cases	Cholera deaths	Smallpox cases	Smallpox deaths
Calcutta [1]						
Bombay		10	0	0	19	12
Madras	0	0	0	0	40	16
Rangoon		6	0	0	31	20
Karachi		3	0	0	1	1
Negapatam [1]						
Singapore	1	1	0	0	1	
Penang	0	0	0	0	0	0
Batavia	0	0	0	0	0	0
Soerabaya	0	0	0	0	0	0
Samarang	0	0	0	0	0	0
Belawan Deli	0	0	0	0	0	0
Macassar	0	0	0	0	0	0
British North Borneo	0	0	0	0	0	0
Bankok [2]	0	0		2	5	3
Saigon and Cholon	0	0	0	0		1
Hongkong	0	0	0	0	1	
Shanghai [1]						
Nagasaki	0	0	0	0	4	
Manila	0	0	0	0	0	0
Kobe	0	0	0	0	0	0
Yokohama	0	0	0	0	0	0
Shimonoseki	0	0	0	0	0	0

[1] Report not received this week.
[2] Infected rats found.

BRAZIL

Plague—State of Ceara—April, 1925.—Press notices dated April 27, 1925, state that plague is present in the interior cities of Sao Benedicto and Jardim, State of Ceara, Brazil, with 22 reported deaths and a large mortality among rats.

CANADA

Communicable diseases—Ontario—April 26–May 30, 1925—Comparative.—During the five-week period, April 26 to May 30, 1925, communicable diseases were reported in the Province of Ontario, Canada, as follows:

Disease	1925		1924	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis		3	9	8
Chancroid			5	
Chicken pox	363		350	
Diphtheria	192	10	270	26
German measles	21		171	
Goiter	42		2	1
Gonorrhea	215		75	
Influenza		28		14
Lethargic encephalitis		2	3	8
Measles	2,152	3	4,577	13
Mumps	478		978	
Pneumonia		168		188
Poliomyelitis	5	2		
Scarlet fever	507	6	659	8
Smallpox	16	1	32	2
Syphilis	177		115	
Tuberculosis	209	92	217	105
Typhoid fever	53	9	56	2
Whooping cough	400	11	141	4

Locality of smallpox occurrence.—Smallpox was reported at eight localities in the Province of Ontario during the period under report. The largest number of cases, viz, five, occurred at Welland. At Merriton and Chatham there were reported three cases each; at Ottawa, two cases; at Crowland, St. Catherines, and Guelph, one case each. At Kenora one death from smallpox was notified.

ECUADOR

Mortality—Communicable diseases—Quito—April, 1925.—During the month of April, 1925, 170 deaths from all causes were reported at Quito, Ecuador, including dysentery, 4; measles, 13; typhoid fever, 2; tuberculosis, all forms, 6. There were reported 25 deaths from acute bronchitis, 5 from pneumonia, 14 from other diseases of the respiratory system, and 6 from organic diseases of the heart. Population, 100,819.

Plague—Plague-infected rats—Guayaquil—April 16-30, 1925.—During the period April 16 to 30, 1925, three cases of plague with two deaths were reported at Guayaquil, Ecuador. During the same period, out of 10,583 rats taken, 43 were found plague infected.

EGYPT

Plague—May 7-13, 1925—Summary.—During the week ended May 13, 1925, 12 cases of plague were reported in Egypt, 1 case being notified at Suez and 10 cases in the Province of Beni-Souef. The total number of cases reported from January 1 to May 13, 1925, was 40, as compared with 224 cases reported during the corresponding period of the year 1924.

MADAGASCAR

Plague—Tananarive Province—March 16-31, 1925.—During the period March 16 to 31, 1925, 94 cases of plague with 81 deaths were notified in the Province of Tananarive, Madagascar. Of the cases reported, 3 occurred in the town of Tananarive, in the interior of the island, and 91 cases at other localities of Tananarive Province. For distribution according to type see page 1340.

NEW ZEALAND

Poliomyelitis—April 14-27, 1925.—Poliomyelitis (infantile paralysis) was reported still present in New Zealand[1] during the two weeks ended April 27, 1925, with 47 cases and 6 deaths.

ZANZIBAR

Leprosy—March, 1925.—During the month of March, 1925, a case of leprosy was reported at Zanzibar. The case was sent to the Funzi leper settlement.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended June 19, 1925 [a]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Apr. 12-18, 1925: Cases, 4,991; deaths, 2,692.
Calcutta	Apr. 19-May 2	116	109	
Madras	May 3-9	1		
Siam.				
Bangkok	Apr. 12-18	4	3	

[a] From medical officers of the Public Health Service, American consuls, and other sources.

[1] Public Health Reports, May 22, 1925, p. 1076, and May 29, 1925, p. 1119.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended June 19, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo	Apr. 26-May 2	1	2	
Egypt				May 7-13, 1925: Cases, 12. Jan. 1-May 13, 1925: Cases, 40. Corresponding period year 1924: Cases, 224.
City—				
Suez	May 13	1		Bubonic.
Province—				
Beni-Souef	May 7-13	10		
Fayoum	do	1		
India				Apr. 12-18, 1925. Cases, 5,410; deaths, 4,649.
Bombay	Apr. 19-25	23	30	
Karachi	May 3-9	5	3	
Madras Presidency	Apr. 5-18	43	26	
Java:				
East Java—				
Soerabaya	Apr. 2-8	1	1	
West Java—				
Batavia	Apr. 18-24	14	14	Province.
Cheribon	Mar. 12-25	8	22	
Pekalongan	do		38	
Tegal	do		8	
Madagascar:				
Tananarive Province	Mar. 16-31	94	81	Bubonic, cases, 63; deaths, 53. Pneumonic, 7; deaths, 6. Septicemic, cases, 24, deaths, 22.
Tananarive Town	do	3	3	Pneumonic, 2. Septicemic, 1.
Other localities	do	91	78	Bubonic, cases, 63, deaths, 53. Pneumonic, cases, 5, deaths, 4. Septicemic, cases, 23; deaths, 21.
Siam:				
Bangkok	Apr 12-18	1	1	
Straits Settlements:				
Singapore	Apr. 19-25	7	4	

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Brazil.				
Pernambuco	Mar 28-Apr. 18	21	13	
British East Africa:				
Mombasa	Mar. 29-Apr. 18	13	4	
Tanganyika Territory	Mar. 22-28	16	2	
Zanzibar	Mar 1-31	1		
Canada:				
British Columbia—				
Vancouver	May 18-24	1		
New Brunswick—				
Victoria	May 24-30	1		County.
Ontario				Apr. 26-May 30, 1925: Cases, 16; deaths, 1 Corresponding period, year 1924—cases, 32; deaths, 2.
Ceylon:				
Colombo	Apr. 19-25		1	Port case.
China:				
Antung	May 5-10	1		
Foochow	Apr. 26-May 2			Present.
Hongkong	Mar. 29-Apr. 18	14	13	
Manchuria—				
Dairen	Apr. 6-12	11	2	
Harbin	Apr 22-28	5		
Nanking	Apr. 25-May 9			Present.
Chosen:				
Seoul	Apr. 1-30	1		
Great Britain:				
London	May 3-9	5		
New Castle-on-Tyne	May 17-23	4		
India				Apr. 12-18, 1925: Cases, 7,202; deaths, 1,805
Bombay	Apr. 19-25	40	23	
Calcutta	Apr. 19-May 2	407	330	
Karachi	May 2-9	7	3	
Madras	May 3-9	41	18	
Indo-China:				
Saigon	Apr. 12-18	3	2	Including 100 kilometers of surrounding country.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended June 19, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Japan:				
Nagasaki	Apr. 27–May 3	10	2	
Java.				
East Java—				
Soerabaya	Apr. 2–8	31	13	
Mexico				
Durango	May 1–31		11	
Guadalajara	May 26–June 1		2	
Mexico City	May 9–16	2		
Portugal:				
Lisbon	Apr 27–May 10		2	
Oporto	May 10–16	1		
Siam:				
Bangkok	Apr 12 18	2	2	
Spain:				
Madrid	Apr. 1–30		3	
Malaga	May 10–23		7	

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Chile:				
Concepcion	Apr 28–May 4		1	
Talcahuano	May 10–16		1	
Valparaiso	May 3–9		1	
Egypt				
Cairo	Mar 5–18	4	3	
Mexico.				
Mexico City	May 10–16	2		
Palestine				
Jaffa District	Apr 28–May 11	2		
Jerusalem	Apr 28–May 11	4		
Tiberias District	May 5–11	2		

Reports Received from December 27, 1924, to June 12, 1925[1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29–Dec. 27, 1924: Cases, 14; deaths, 13 Dec. 28, 1924–Jan. 24, 1925. Cases, 24; deaths, 17.
Colombo	Nov 16–22	1		
Do	Jan 11–24	2	2	
India				Oct 19, 1924–Jan. 3, 1925: Cases, 27,164, deaths, 16,228. Jan. 4–Apr. 11, 1925: Cases, 32,063; deaths, 19,388
Bombay	Nov 23–Dec 20	4	4	
Do	Jan. 18–24	1	1	
Calcutta	Oct 26–Jan. 3	59	51	
Do	Jan 4–Apr 18	393	339	
Madras	Nov. 16 Jan. 3	69	40	
Do	Jan 4–May 2	144	102	
Rangoon	Nov 9–Dec. 20	9	2	
Do	Jan. 4–Apr. 25	26	18	
Indo-China				Aug 1–Sept 30, 1924: Cases, 14; deaths, 10. Dec. 1–31, 1924: Cases, 5; deaths, 2
Province—				
Anam	Aug. 1–31	1	1	
Cambodia	Aug. 1–Sept. 30	6	5	
Do	Dec. 1–31	1		
Cochin-China	Aug. 1–Dec. 31	10	5	
Saigon	Nov. 30–Dec. 6	1		
Do	Mar 15–21	1	1	
Tonkin	Dec. 1–31	1	1	
Siam:				
Bangkok	Nov. 9–29	4	2	
Do	Jan. 18–Apr. 4	11	7	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June, 12, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 2-Jan. 3	30	13	
Do	Jan. 18-24	3	1	
Brazil:				
Bahia	Jan. 4-May 2	13	9	
Santos	Year, 1924	2		Bubonic.
British East Africa				
Tanganyika Territory	Nov. 23-Dec. 27	17	10	
Do	Jan. 18-Mar 14	18	12	
Uganda	Aug.-Dec., 1924	279	243	
Do	Jan 1-31	29	28	
Canary Islands.				
Las Palmas	Jan 21-23	2		Stated to be endemic.
Do	Feb. 4	1		Stated to have been infected with plague Sept. 30, 1924.
Do	Mar. 26	1	1	
Realejo Alto	Dec. 19	3	1	Vicinity of Santa Cruz de Teneriffe.
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity
Celebes:				
Macassar	Oct 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-Jan. 3	12	9	
Do	Jan. 4-Apr. 14	21	21	
China				
Foochow	Dec. 28-Jan. 3			Present.
Nanking	Nov. 23-Mar 7			Do
Shing Hsien	October, 1924		790	
Ecuador				Mar 16-Apr 15, 1925. Cases, 10; deaths, 4
Chimborazo Province—				
Alausi District	Jan. 14		14	At 2 localities on Guayaquil & Quito Ry.
Daule	Mar. 16-31	1		
Guayaquil	Nov. 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92.
Do	Jan. 1-May 15	72	33	Rats taken, 99,017; found infected, 395
Naranjito	Feb. 16-Mar. 15	1		
Yaguachi	Feb. 1-Mar. 15	2	1	
Egypt				Year 1924: Cases, 373 Jan. 1-May 6, 1925: Cases, 28; deaths, 18
City—				
Suez	Apr. 2-22	2	2	
Province—				
Assiout	May 2	1	1	
Beni-Souef	Jan. 18	1	1	
Dakhalia	Jan 7	1	1	
Fayoum	Apr. 5-May 2	4	3	
Girgeh	Jan. 9-Apr 5	2	2	
Kalioubiah	Jan 5-Apr. 22	5	2	
Menoufieh	Jan. 1-Apr. 9	8	4	
Minia	Apr. 1-May 5	4	2	
Gold Coast				September - December, 1924: deaths, 52.
Greece:				
Patras	Apr. 5	1		
Hawaii.				
Honokaa	Nov. 4	1		Plague-infected rodents found Dec. 9, 1924, Jan. 15, Apr. 28 and 30, 1925. Vicinity Pacific Sugar Mill, Island of Hawaii.
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 28,154; deaths, 21,505. Jan. 4-Apr. 4, 1925: Cases, 65,576; deaths, 58,027
Bombay	Nov. 22-Jan. 3	4	3	
Do	Jan. 4-Apr. 18	68	55	
Calcutta	Jan. 18-24	1	1	
Karachi	Nov. 30-Dec. 6	2	1	
Do	Jan. 4-Feb. 21	12	11	
Do	Mar. 29-Apr. 25	6	7	
Madras Presidency	Nov. 23-Jan. 3	685	487	
Do	Jan. 4-24	658	511	
Do	Mar. 8-14	80	48	
Do	Apr 19-25	27	16	
Rangoon	Oct. 26-Jan 3	26	25	
Do	Jan. 4-Apr. 25	245	215	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 12, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China				Aug 1-Sept. 30, 1924: Cases, 25; deaths, 20. Dec. 1-31, 1924: Cases, 11, deaths, 11. Corresponding month, 1923: Cases, 15; deaths, 5.
Province—				
Anam	Aug. 1-Sept 30	4	4	
Do	Dec 1-31	5	5	
Cambodia	Aug 1-Sept. 30	18	15	
Do	Dec 1-31	6	6	
Cochin-China	do	3	1	
Saigon	Dec. 25 31	1	1	Including 100 square kilometers of surrounding territory.
Do	Jan. 11-17	2	1	Do.
Iraq	June 29 Jan. 3	20	14	
Bagdad	Mar. 22 28	1	1	
Japan	Aug. 10-Dec. 6	19		
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri. Epidemic
Pare	Nov. 29			Do.
Samarang	Mar 22 28	2	2	
Sidoardja	Jan 2			Declared epidemic. Province of
Soerabaya	Nov 16-Dec. 31	71	72	Soerabaya.
Do	Jan. 15-Apr. 1	28	26	Mar 29 Apr. 4, 1925. 2 plague rats found
Soerakarta	Feb. 20			Epidemic plague in one locality.
West Java—				
Batavia	Apr. 11-17	12	12	Province.
Cheribon	Oct 14 Nov 3		14	
Do	Nov 18-Dec. 22		80	
Do	Jan. 1-14		44	
Do	Feb 5 11		13	
Do	Feb. 19-25		13	
Do	Mar 5-11		14	
Pasoeroean	Dec 27			Province. Epidemic in one locality
Pekalongan	Oct. 14-Nov. 3		29	
Do	Nov. 18-Dec. 31		177	Pekalongan Province.
Do	Jan 1-14		81	
Do	Feb 5-11		36	
Do	Feb 19-25		38	
Do	Mar. 5-11		28	
Probalingga	Dec. 27			Province. Epidemic.
Tegal	Oct. 14-Dec. 31		26	
Do	Jan. 1-14		37	Pekalongan Province.
Do	Feb 5-11		7	
Do	Feb. 19-25		10	
Do	Mar. 5-11		3	
Madagascar:				
Fort-Dauphin (port)	Nov. 1-Dec. 15	12	5	
Do	Feb 1-15	1	1	Bubonic.
Itasy Province	Nov 1-Dec 15	4	2	
Do	Feb 1 Mar. 15	6	6	
Majunga (port)	Nov 1-30	1	1	
Moramanga Province				Nov. 1 Dec. 15, 1924: Cases, 49; deaths, 34. Jan. 16-Mar. 15, 1925: Cases, 8; deaths, 8.
Tamatave (port)	Nov 1-30	1	1	
Tananarive Province				Oct 16-Dec. 31, 1924: Cases, 296; deaths, 274.
Do				Jan 1-Mar. 15: Cases, 456; deaths, 387.
Tananarive (town)	Mar 1 15	3	3	
Mauritius Island				Year 1924: Cases, 161; deaths, 144.
District—				
Flacq	Dec 1-31	5	4	
Pamplemousses	do	1	1	
Plaines Wilhems	January - December, 1924.	54	47	Not present March, April, May.
Port Louis	February-December, 1924.	101	92	
Mexico:				
Tampico	Apr. 6, 1925			Plague rat found in vicinity of Government wharves.
Morocco:				
Marrakech				Feb. 9, 1925. Present in native quarter of town. Stated to be pneumonic in form and of high mortality.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 12, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Nigeria				August-November, 1924: Cases, 387; deaths, 317.
Palestine:				
Jerusalem	Mar. 3-9	1		
Peru:				
Callao	February, 1925	6	6	
Siam:				
Bangkok	Dec. 28-Jan 3	1	1	
Do	Jan. 25-Apr. 4	14	13	
Siberia:				
Transbaikalia—				
Turga	October, 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Nov. 9-15	1	1	
Do	Jan. 4-Apr. 18	32	26	
Syria:				
Beirut	Jan. 11-Apr. 10	2		
Turkey:				
Constantinople	Jan. 9-15	5	5	
Union of South Africa	Nov. 22-Jan. 3	28	15	In Cape Province, Orange Free State, and Transvaal.
Do	Jan. 4-Apr. 4	55	23	Do.
On vessels:				
S. S. Conde				At Marseille, France, Nov. 8, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port.

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 31, 1924: Cases, 409. Jan. 1-20, 1925: Cases, 107.
Algiers	Jan. 1-Apr. 30	16		
Arabia:				
Aden	Jan. 25-Apr. 18	14	1	
Argentina:				
Buenos Aires	Mar. 15-21	1		
Belgium	Jan. 1-Feb. 10	4		
Bolivia:				
La Paz	Nov. 1-Dec. 21	20	11	
Do	Jan. 1-Mar. 31		12	
Brazil:				
Pernambuco	Nov. 9-Jan. 3	100	27	
Do	Jan. 4-Mar. 28	111	56	
Porto Alegre	Apr. 12-18		1	
British East Africa:				
Kenya—				
Mombasa	Jan. 18-Feb. 28	66	14	
Do	Mar. 8-28	29	7	
Tanganyika Territory	Feb. 15-21	1		
Uganda—				
Entebbe	Oct. 1-31	4		
British South Africa:				
Northern Rhodesia	Oct. 28-Dec. 15	57	2	
Do	Jan. 27-Apr. 14	12		Natives.
Do	Mar. 17-Apr. 14	9		
Southern Rhodesia	Jan. 29-Mar. 25	4	1	
Bulgaria:				
Sofia	Mar. 12-18	1		Varioloid.
Canada:				
Alberta—				
Calgary	Mar. 15-21	1		
British Columbia—				
Ocean Falls	Mar. 7-27	6		Very mild.
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-Apr. 12	305		
Do	Apr. 19-May 17	16		
Victoria	Jan. 18-Apr. 25	11		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-Apr. 11	31		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 12, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Canada—Continued.				
New Brunswick—				
Northumberland	Feb 8-14	1		County
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33. Dec. 28, 1924, to Apr. 25, 1925: Cases, 69; deaths, 1.
Hamilton	Jan. 24-30	1		
Kingston	Apr. 12-18	1		
Ottawa	Mar. 29-May 9	3		
Welland	Mar 22-Apr. 25	7		
Ceylon				July 27-Nov. 29, 1924 Cases, 27; deaths, 1
Colombo	Jan. 18-Feb. 7	4		
Do	Mar. 8-Apr 18	17		
China:				
Amoy	Nov. 9-Feb 21			Present.
Do	Feb. 22-May 2		29	Prevalent in surrounding district
Antung	Nov. 17-Dec. 28	5		
Do	Jan. 5-Feb 14	15	1	
Do	Mar 2-Apr 5	9	1	
Do	Apr. 12-26	5		
Canton	Mar 15-Apr 18			Prevalent
Chefoo	Mar 15-21			Prevalent. No foreign cases.
Chungking	Mar 22-May 2			Stated to be widely prevalent.
Foochow	Nov. 2-May 2			Present.
Hongkong	Nov 9 Jan. 3	6	2	
Do	Jan. 4-Apr. 4	36	20	
Manchuria—				
Dairen	Jan 19-Apr. 25	18	3	
Harbin	Jan 15-May 5	7		
Nanking	Jan 4-Apr. 18			Prevalent.
Shanghai	Dec. 7-27	1	2	
Do	Jan 18-Apr 25		9	
Do	Apr. 12-25	2	1	
Chosen:				
Seoul	Dec. 1-31	1		
Do	Mar. 1-31	2		
Colombia:				
Buenaventura	Feb. 15-Apr. 4	3		
Santa Marta	Mar. 15-28			Present in mild form in localities in vicinity
Cuba:				
Santiago	Apr. 12-18	3	1	
Czechoslovakia				Apr.-June, 1924 Cases, 1; occurring in Province of Moravia.
Dominican Republic:				
Puerta Plata	Mar. 8-21	3		
Dutch Guiana:				
Paramaribo	Apr. 20	1		
Ecuador				
Guayaquil	Nov 16-Dec 15	4		
Egypt:				
Alexandria	Nov. 12-Dec 31	10		
Do	Jan. 8-Apr. 29	10		
Cairo	Jan. 29-Feb. 4	1	1	
Esthonia				Dec. 1-31, 1924. Cases, 2.
France				July-December, 1924. Cases, 81.
Do	January, 1925	10		
Boulogne-Sur-Mer	Apr. 1-30	1	1	
Dunkirk	Mar. 2-8	1		From vessel. In quarantine.
St. Malo	Feb. 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis.
Germany				June 29-Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1-10	1		
Gibraltar	Dec. 8-14	1		
Do	May 4-10	2		
Gold Coast				July-December, 1924: Cases, 106; deaths, 1.
Great Britain:				
England and Wales	Nov. 23-Jan. 3	472		
Do	Jan. 4-May 9	2,555		
Newcastle-on-Tyne	Jan. 18-Feb. 21	9		
Do	Mar. 1-May 16	7		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 12, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Greece				January-June, 1924: Cases, 170; deaths, 27.
Do				July-December, 1924: Cases, 38; deaths, 26.
Saloniki	Nov. 11-Dec. 22	3		
Do	Feb. 17-Mar. 2	4		
Haiti:				
Cape Haitien	Mar. 22-Apr. 2	6		
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 12,564; deaths, 2,857. Jan. 4-Apr. 11, 1925: Cases, 68,380; deaths, 15,736.
Bombay	Nov. 2-Jan. 3	30	18	
Do	Jan. 4-Apr. 4	601	307	
Do	Apr. 12-18	40	21	
Calcutta	Oct. 26-Jan. 8	307	170	
Do	Jan. 4-Apr. 18	4,255	3,068	
Karachi	Nov. 16-Jan. 3	16	2	
Do	Jan. 4-Feb. 14	52	6	
Do	Feb. 22-May 2	99	26	
Madras	Nov 16-Jan. 3	122	48	
Do	Jan. 4-Mar. 7	552	212	
Do	Mar 15-May 2	599	246	
Rangoon	Oct. 26-Jan. 3	86	28	
Do	Jan 4-Feb 7	287	49	
Do	Feb. 15-Apr. 25	1,268	404	
Indo-China				Aug 1-Sept. 30, 1924: Cases, 223; deaths, 76. Dec. 1-31, 1924: Cases, 485; deaths, 114.
Province—				
Anam	Aug. 1-Sept 30	49	11	
Do	Dec 1-31	167	26	
Cambodia	Aug 1-Sept. 30	40	9	
Do	Dec. 1-31	30	13	
Cochin-China				Aug. 1-Sept. 30, 1924: Cases, 115; deaths, 49. Dec. 1-31, 1924: Cases, 50, deaths, 13.
Saigon	Nov 16-Jan. 3	17	5	Including 100 square kilometers of surrounding country.
Do	Jan. 4-Feb. 21	32	8	
Do	Mar 1-Apr. 11	55	9	Do.
Tonkin	Aug 1-Sept. 30	19	7	
Do	Dec. 1-31	238	62	
Iraq	June 29-Jan. 10	138	67	
Do	Jan. 11-20	4	2	
Bagdad	Nov. 9-Dec. 27	2	1	
Do	Mar. 1-28	2		
Italy				June 29-Dec. 27, 1924: Cases, 63.
Jamaica				Nov. 30, 1924-Jan. 3, 1925: Cases, 50. Reported as alastrim.
Do				Jan. 4-Apr. 25, 1925: Cases, 275. Reported as alastrim.
Kingston	Nov. 30-Dec. 27	4		Reported as alastrim.
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Nagasaki	Feb. 9-May 10	34	9	
Taihoku	Apr. 4-10	1		
Taiwan	Jan. 1-31	1		
Java:				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov. 12-19			Epidemic in 2 native villages.
Soerabaya	Oct. 19-Dec. 31	685	212	
Do	Jan. 15-Apr. 1	590	80	
West Java—				
Batam	Oct. 14-20	2		
Batavia	Oct. 21-Nov. 14	2		
Do	Dec. 30-Jan. 2	19	4	
Buitenzorg	Dec. 25-31	1		Batavia Residency.
Cheribon	Oct. 14-Nov. 24	15		
Do	Jan. 1-28	3		
Krawang	Jan. 15-21	1		
Pekalongan	Oct. 14-Nov. 24	22		
Do	Dec. 25-31	3		Province.
Premalang	Jan. 8-14	1		Pekalongan Residency.
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 6. Jan. 1-Mar. 31, 1925: Cases, 9.
Lithuania				Jan. 1-31, 1925: Cases, 2.
Malta				Apr. 1-30, 1925: Cases, 6.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 12, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico:				
Chiapas (State)	Mar. 1			Reported severely prevalent.
Durango	Dec. 1-31		5	
Do	Jan. 1-Apr. 30		29	
Guadalajara	Dec 23-29		1	
Do	Jan. 6-May 25		19	
Mexico City	Nov 23-Dec 27	5		Including municipalities in Federal district.
Do	Jan. 11-May 9	73		
Monterey				Jan. 24, 1925: Outbreak, Mar. 14, 1925, present.
Oaxaca (State)	Mar. 1			Reported severely prevalent.
Salina Cruz	Dec. 1-31	1	1	
Do	Feb. 22-Mar. 31	7	1	
Saltillo	Feb. 22-Apr. 11		2	
San Luis Potosi	Mar. 29-May 23		5	
Tampico	Dec 11-31	5	4	
Do	Jan. 1-Apr. 30	66	20	
Torreon	Apr. 1-30	1	1	
Tuxpan district	Apr. 17-May 7	20	3	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan. 5-Apr. 19		39	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Yucatan (State)	Apr. 5-11			In country towns.
Nigeria				January-June, 1924: Cases, 357; deaths, 87.
Do				July-November, 1924: Cases, 87; deaths, 25.
Paraguay:				
Asuncion	Jan 4-10		1	
Persia:				
Teheran	Sept. 23-Dec 31		12	
Do	Jan 1-Mar. 19		19	
Peru:				
Arequipa	Nov. 24-30		1	
Do	Jan 1-Feb. 28		4	
Philippine Islands:				
Manila	Mar. 29-Apr. 4	3		
Poland				Sept. 21-Dec. 28, 1924: Cases, 30; deaths, 2. Jan. 4-Feb. 28, 1925: Cases, 17; deaths, 1
Portugal:				
Lisbon	Dec. 7-Jan 3	17		
Do	Jan 4-Apr. 25	140		Jan. 4-Apr. 18, 1925: Deaths, 35.
Oporto	Nov. 30-Dec. 27	3	2	
Do	Jan. 11-Apr. 25	5		
Russia				January-June, 1924: Cases, 18,229; July-November, 1924: Cases, 3,665.
Senegal:				
Dakar	Mar 16-22	4		
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan 18-Feb. 21		19	
Do	Mar. 1-Apr. 4	23	7	
Sierra Leone:				
Freetown	Feb. 7-Mar. 15	3		
Kaiyima	Mar. 9-15	1		
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Do	Mar. 19-25		1	
Cadiz	Nov. 1-Dec. 31		51	
Do	Jan. 1-Feb. 28		10	
Madrid	Year 1924		40	
Do	January-February		13	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-May 9		102	
Valencia	Nov 30-Dec. 6	2		
Do	Feb. 15-May 2	6		
Straits Settlements:				
Singapore	Feb. 22-Apr. 18	5	1	
Switzerland:				
Berne	Mar. 15-Apr. 18	5		
Lucerne	Nov. 1-Dec. 31	19		
Do	Jan. 1-31	24		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 12, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Syria:				
Aleppo	Nov. 23-Dec. 27	13		
Do	Jan. 4-Feb. 28	71	18	
Beirut	Feb. 11-Apr. 10	2		
Damascus	Jan. 6-Feb. 20	24		
Tripoli:				
Tripoli	July 14-Jan. 2	53		
Tunis:				
Tunis	Nov. 25-Dec. 29	42	35	
Do	Jan 1-Apr 22		325	
Do	Apr. 30-May 6		13	
Turkey:				
Constantinople	Dec. 13-19	5		
Do	Mar. 16-Apr. 30	8	1	
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 14. Jan. 1-31, 1925 Cases, 4—natives. Mar 1-31, 1925: Cases, 9, white, 3; native, 6.
Cape Province	Feb. 1-21			Outbreaks.
De Aar district	Nov 9-Jan. 31			Do.
Natal	Mar 1-7			Do.
Orange Free State	Nov 2-Apr. 18			Do
Ladybrand district	Jan. 15-31			Outbreak on farm
Transvaal	Nov. 9-Jan. 10			Do
Do	Feb. 1-21			Outbreaks.
Uruguay				January-June, 1924: Cases, 101; deaths, 2.
Do				July-November, 1924: Cases, 53; deaths, 5.
Yugoslavia	Year 1924	330	64	
Do	Jan 1-Feb 28	6	1	
Belgrade	Mar 1-Apr. 7	6		
On vessel.				
S. S. Eldridge	Mar. 23	1		At Port Townsend, from Yokohama and ports
S. S. Habana	Feb. 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St Malo, France, January, 1924, from Sfax, Tunis, believed to have imported smallpox infection.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec 20, 1924: Cases, 101; deaths, 14.
Algiers	Nov. 1-Dec. 31	5	1	
Do	Jan. 1-Apr. 20	14	7	In villages, department of Algiers: Cases, natives, 24; Europeans, 3.
Argentina:				
Rosario	Jan. 1-31		1	
Bolivia				
La Paz	Nov. 1-Dec. 31	8		
Do	Jan. 1-31	2		
Do	Mar. 1-31	1		
Bulgaria				January-June, 1924: Cases, 191; deaths, 28.
Do				July-October, 1924: Cases, 5.
Sofia	Apr. 30-May 6	1		
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Do	Jan. 6-Apr. 20		4	
Iquique	Nov. 25-Dec. 1		2	
Do	Feb. 1-Mar. 28		2	
Talcahuano	Nov. 16-Dec. 20		5	
Do	Jan. 4-10		1	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-Apr. 25		20	
China:				
Antung	Mar. 16-22	1		
Manchuria—				
Harbin	Apr. 8-14	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 12, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Chosen:				
Chemulpo	Feb. 1-28	1		
Seoul	Nov. 1-30	1	1	
Do	Feb 1-Mar. 31	6	2	
Czechoslovakia				December, 1924: Cases, 5.
Do	Jan.-Mar	68	2	
Egypt.				
Alexandria	Dec. 3-9	1	1	
Do	Mar. 12-Apr. 29	4	2	
Cairo	Oct. 1-Dec 23	13	8	
Do	Jan. 22-Mar 4	4	2	
Esthonia				Dec 1-31, 1924: Cases, 5. Jan. 1-31, 1925. Cases, 4. Mar. 1-31, 1925. Cases, 2.
France				July-October, 1924: Cases, 7.
Gold Coast				Oct. 1-31, 1924 1 case.
Greece				May-June, 1924: Cases, 116; deaths, 8
Do				July-December, 1924: Cases, 40; deaths, 4
Athens	Feb 1-Apr. 10		10	
Saloniki	Nov 17-Dec 15	3	2	
Do	Jan. 25-Apr. 20	3		
Japan				Aug 1-Nov. 15, 1924: Cases, 2.
Latvia				October-December, 1924: Cases, 30 Feb 1-Mar 31, 1925: Cases, 15
Lithuania				August-October, 1924 Cases, 15; deaths, 1
Do				Jan. 1-31, 1925 Cases, 27, deaths, 2.
Mexico.				
Durango	Dec. 1-31		1	
Do	Mar. 15-Apr 30	1	2	
Guadalajara	Dec 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District
Do	Jan 11-May 9	113		
San Luis Potosi	Mar 8-May 2		2	
Tampico	May 29	1		
Morocco				November, 1924. Cases, 5.
Palestine				Nov. 12-Dec.29, 1924: Cases, 10.
Ekron	Dec 23-29	1		
Jerusalem	do	2		
Do	Jan 20-26	1		
Mikveh Israel	do	1		
Petach-Tikvah	Mar 24-30	1		
Ramleh	Feb 10-Mar 23	2		
Tiberias	Feb 24-Mar 2	2		
Peru.				
Arequipa	Nov. 24-Dec. 31		3	
Do	Mar. 1-31		1	
Poland				Sept. 28, 1924-Jan. 3, 1925: Cases, 751; deaths, 57 Jan. 4-Feb. 11, 1925: Cases, 827; deaths, 68. Feb. 22-28, 1925: Cases, 147; deaths, 15.
Portugal:				
Lisbon	Dec 29-Jan 4		2	
Do	Apr 6-12		1	
Oporto	Jan. 4-Feb. 7	2		
Rumania				January-June, 1924: Cases, 2,906; deaths, 328.
Do				July-December, 1924: Cases, 288, deaths, 38.
Constanza	Dec. 1-20	1		
Do	Feb 1-28	2		
Russia				Jan 1-June 30, 1924: Cases, 95,082 July-November, 1924: Cases, 34,720.
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	
Sweden:				
Goteborg	Jan. 18-Feb. 28	2		
Tunis				July 1-Dec. 20, 1924: Cases, 40.
Tunis	Mar. 5-25	9	1	
Do	Apr. 2-May 6	25	5	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 12, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Turkey:				
Constantinople	Nov. 15-Dec. 19	6	1	
Do	Jan. 2-Apr. 30	10	1	
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 345; deaths, 87. Jan. 1-Mar. 31, 1925: Cases, 200; deaths, 24; native. In white population, cases, 12.
Cape Province	Nov. 1-Dec. 31	126	24	
Do	Jan. 1-Mar. 31	91	12	
East London	Nov. 16-22	1		
Do	Jan. 18-Apr. 4	3	2	
Port Elizabeth	Feb. 22-Mar. 7	1	1	
Natal	Nov. 1-Dec. 31	130	50	
Do	Jan. 1-Mar. 31	49	7	
Durban	Feb. 15-Mar. 28	4		
Orange Free State	Nov. 1-Dec. 31	59	8	
Do	Jan 1-Mar. 31	41	5	
Transvaal	Nov. 1-Dec. 31	30	5	
Do	Jan. 1-Mar. 31	14		
Yugoslavia				Year 1924: Cases, 319; deaths, 22. Jan. 1-Feb. 28, 1925: Cases, 87; deaths, 8.
Belgrade	Nov. 24-Dec. 28	5		
Do	Apr. 8-30	4		

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Gold Coast	October-November, 1924.	4	4	
Salvador:				
San Salvador	June-October, 1924.	77	28	Last case, Oct. 22, 1924.

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UNITED STATES PUBLIC HEALTH SERVICE

HUGH S. CUMMING, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

Asst Surg. Gen. B. J. LLOYD, *Chief of Division*

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PUBLIC HEALTH REPORTS

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TETANUS IN THE UNITED STATES FOLLOWING THE USE OF BUNION PADS AS A VACCINATION DRESSING

By CHARLES ARMSTRONG, Surgeon, United States Public Health Service

Through investigations of the complications following vaccination against smallpox, 11 cases of postvaccinal tetanus which followed the use of bunion pads as a vaccination dressing have been investigated. Nine of these cases were fatal. The cases occurred in seven States and were distributed in point of time as follows: Two in 1921, 5 in 1924, and 4 in 1925 (to May 20).[1]

The extent to which bunion pads, which consist of a felt ring coated on one side with a film of glue, are used as a vaccination dressing in the United States is unknown. It is, however, apparent from these studies that in certain localities their use for this purpose is not uncommon.

Six of the physicians in whose practice 7 of the 10 cases of postvaccinal tetanus developed, estimate that they had vaccinated approximately 700 persons on whom bunion pads were applied as a dressing. These cases were vaccinated during the fall of 1924 and the winter of 1924–25, during the same period in which the cases of tetanus developed.

Bunion pads of the same varieties and from the same sources as those used in the cases which developed tetanus were collected from several localities. These samples were examined by Dr. Ida A. Bengtson. In addition, 186 pads of similar makes, purchased in Washington, D. C., were examined by Mr. Conrad H. Kinyoun.

Approximately 25 per cent of these pads showed the presence of tetanus organisms. The criterion of infection of the pads was the development, on glucose broth or meat mash media, of an organism morphologically like tetanus, which developed a toxin lethal for mice and neutralizable with tetanus antitoxin.

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[1] Wm. Findlay and J. W. Findlay (1902–Lancet I, pp. 506–510) report a case of tetanus, female, age 21, which occurred in Glasgow in 1901, following the use of a bunion pad on a leg vaccination. This is described as a revaccination. Scarification method was employed, inseration "a little over half a square inch in size." Symptoms of tetanus developed on the twelfth day following vaccination; bunion pad still in place. Pad was removed on thirteenth day; wound did not look "particularly healthy." The case recovered. No causative relationship was suspected between the dressing and the development of tetanus in this case.

If the 700 pads known to have been used in the practice of these six physicians were contaminated with tetanus in the same proportion as those which we tested, it would mean that 175 persons were dressed with infected bunion pads and only 7, or 4 per cent, developed tetanus.

In nine of the cases investigated, the tetanus followed a primary vaccination, while in two cases the data on this point are not available. We have not yet, as far as is known, met a case of postvaccinal tetanus following any save a primary vaccination. This suggests that the development of tetanus is dependent upon a severe local "take," which, in turn, depends upon the susceptibility of the patient and, to some extent, upon the method of vaccination.

It may, therefore, be significant that these cases all followed the cross-hatch or scarification methods of insertion, methods which undoubtedly tend to give more severe local lesions in primary vaccinations than are caused by the multiple puncture method; that is, 20 to 30 tangential punctures in an area one-eighth inch square, or a single linear insertion one-eighth inch in length.

The abrasion described in these 10 cases varied in size from 3 milimeters in diameter to the size of a dime.

The virus used in these cases was from three different manufacturers, A, B, and C.

A's product was used in two cases, B's in five cases, and C's in three cases (and probably in a fourth). In only one instance was it possible to establish definitely the exact lot of virus used. Bulk samples of this lot were carefully retested by different workers, using various methods, but no tetanus could be demonstrated. In other instances in which the exact lot number of the virus could not be definitely determined, it was possible to determine that the virus must necessarily have been from one of several lots. In such cases samples of all these lots were carefully retested, but tetanus was not demonstrated in any of them. Moreover, among some 25,000 vaccinations, methods unknown, which were estimated to have been performed in 1924 and 1925, during the same period and in the same localities in which seven cases of tetanus followed the use of bunion pads as a dressing, not a single definite case of tetanus developed. In one locality, after cases 7 and 8 had died, a child with a severe leg vaccination was given antitoxin on account of pain and stiffness in the neck. Subsequent course and prompt recovery of this case indicate that the ailment was probably not tetanus.

A summary of the 11 cases of tetanus is shown in Table 1, and a more detailed vaccination history of each case follows.

TABLE 1

Case No.	Color	Sex	Age	Vaccinated	Vaccination history	Bunion pad applied—	Interval, vaccination to onset of tetanus, in days	Termination
1	White	Male	6	1921	Primary	At time of vaccination	12	Fatal.
2	do	do	6	1921	do	do	(?)	Do.
3	do	do	16	1924	do	do	28	Do.
4	do	do	(1)	1924	(?)	do	15	Do.
5	do	Female	9	1924	Primary	Fourth day after vaccinated	16	Recovered.
2	do	do	(2)	1924	(?)	do	(?)	Fatal.
7	do	Male	6	1924	Primary	At time of vaccination	23	Recovered.
8	do	Female	30	1925	do	do	20	Fatal.
9	do	Male	16	1925	do	do	24	Do.
10	do	Female	8	1925	do	do	20	Do
11	do	do	7	1925	do	do	19	Do.

[1] Adult. [2] Child.

Case 1.—White, male, age 6, home conditions unknown. Vaccinated January 21, 1921, left arm, usual site. Arm cleaned with alcohol, followed by water. Scarification method of vaccination was employed, virus B was rubbed in, and an oval bunion pad was applied. Pad was covered with gauze held in place by adhesive strips. Patient was advised to remove pad in one week, clean lesion with boric acid, and apply a gauze dressing. Tetanus developed February 2, 1921; trismus and opisthotonos present. Child transferred to hospital, received 4,500 units antitoxin February 3. Died February 5, 1921.

Case 2.—White, male, age 6, one of a family of seven, home surroundings poor, no livestock except few chickens. Child was well when vaccinated; primary vaccination September, 1921; usual site, right arm. Insertion was made by abrading an area "size of a dime." Virus from manufacturer B rubbed in. Bunion pad applied held by two strips of adhesive. Arm became foul smelling and pad was removed "9 or 10 days later." Lesion at this time described by mother as size of 50-cent piece. Bandage was applied by parent. Tetanus developed later and child died September 21. No history of injury in case.

Case 3.—White, male, age 16, school boy, only child, home surroundings excellent, no livestock or pets of any kind. Boy was well when vaccinated August 26, 1924. Arm was cleaned with soap and water and alcohol. Insertion, primary, on left arm, usual site. Area described as 3/16 by 3/16 inch, abraded with needle. Virus of manufacturer B was rubbed in. Bunion pad was applied, the opening of which was covered by a celluloid top, fitted by the physician.

Shield was on for 21 days when it came off. The arm was foul smelling at this time and there was a large hole the size of 25 or even 50 cent piece. Symptoms of tetanus developed September 21; ran a typical severe course; 5,000 units antitoxin were given intramuscularly on 22d. Death occurred September 23. No history of injuries other than vaccination.

Case 4.—White, male, adult, automobile mechanic, vaccinated October 27, 1924 (primary (?)) crosshatch method, virus C was rubbed in, and a bunion pad was applied, held by strips of adhesive above and below. The take discharged profusely, but "wasn't sore," so patient refused to return to physician. He next saw his physician November 11 and complained of rigidity of muscles of jaws and neck. Diagnosis of tetanus was made the same day; 20,000 units antitoxin were administered intravenously on 12th and 500 units locally about the site of vaccination. Chloral and morphine were given freely, and 80 c. c. of 3 per cent magnesium sulphate were given intravenously. On November 13 the patient received 5,000 units antitoxin intrathecally; died same day in general convulsions. No history of other injuries.

Case 5.—White, female, age 9, home surroundings "not the best," vaccinated at school along with 60 other children on November 20, 1924, on left arm. Scarification method; abrasion stated to cover about 5 square millimeters. Virus A was rubbed in and allowed to dry for 10 minutes; no dressing. After four days a bunion pad was applied, felt-side down, held by two strips of adhesive and covered by three or four turns of a 2-inch bandage. The first symptoms of tetanus were noted on December 6, but the child was not seen by physician until December 9, at which time there was a fully developed case of tetanus. Child was conscious, temperature was normal, pulse 90, full and strong. Tonic spasms occurred at half minute intervals, jaws rigid, opisthotonos present. Vaccination described as about healed, but covered with a black scab, which was removed. Chloral and potassium bromide by mouth and 1 c. c. of 2 per cent carbolic acid solution hypodermically were given every 3 hours. This treatment seemed to hold spasms in check and child remained about the same for two weeks. Attempts to cut down the dosage of chloral and, in one instance, to reduce the carbolic acid were followed by return of contractures. Improvement then began, and on December 23 patient could open her mouth and partially flex both legs. Medication was then reduced with no return of symptoms. Recovery was complete. No history of other injuries.

Case 6.—White, child, age unknown, was vaccinated at the same school on same day, by means of the same method, and by same physician as case 4. The child moved to another State, where she died of tetanus. Further particulars not available.

Case 7.—White, male, age 6, home conditions excellent. Received primary vaccination on the arm on December 13, 1924. A scarification described as about 3 millimeters in diameter was made and virus from manufacturer B was rubbed in. A bunion pad was applied, covered with gauze and a bandage. This dressing remained undisturbed for 10 days; it was then removed by physician and another was applied. At this time vaccination area filled pad, had ruptured, and was surrounded with multiple vesicles. Site was indurated and arm markedly swollen to the elbow, very painful. Following this the arm was dressed every third day by a nurse and began to heal. On January 5 the boy complained of a stiff back, which increased, and on January 8 he complained of sore throat and stiff jaws. He was moved to a hospital on January 11 with a well developed case of tetanus, jaws set, body rigid, and repeated convulsions. He received 11,500 units of antitoxin with morphine to control the spasms. He was kept in a narcotic sleep. On the 15th he received 7,000 units of antitoxin. On the following day convalescense apparently was beginning. Recovered. No history of other lesions.

Case 8.—White, female, age 39, housewife, lived in country, surroundings unknown. Kept two cows and some chickens. Primary vaccination January 11, 1925. Arm was cleaned with soap and alcohol, area "size of pea" was abraded with needle, virus C was rubbed in and left to dry for 30 minutes, and bunion pad was applied, held by adhesive above and below. Pad was undisturbed for 10 days, at the end of which time it was removed on account of the odor. Patient cleaned the arm and applied a celluloid shield. Wound was described as size of a 5 cent to 25 cent piece. A scab was present and pus ran from beneath it. Typical symptoms of tetanus developed on January 31. The patient died on February 2. The husband states that a solid scab was present and that the lesion was healing at time of death. The patient was just convalescing from scarlet fever when vaccinated. There was no history of any lesion other than vaccination.

Case 9.—White, male, age 16, farm hand, surroundings fair. Received primary vaccination on January 13, 1925, usual site, left arm. Arm was cleaned with soap and water, possibly followed by ether. Insertion was made by 10 parallel scratches with a needle, covering an area $\frac{3}{16}$ by $\frac{3}{16}$ inch. Virus C was rubbed in and allowed to dry for 15 to 30 minutes. A bunion pad was then applied and held in place by three diagonal strips of adhesive, which closed the opening of the pad. Dressing was undisturbed for 14 days. Pad was then removed. Arm was swollen and smelled bad; scab was loose and came away, leaving an area size of 5 to 25 cent piece and from $\frac{1}{16}$ to $\frac{1}{12}$ inch in depth. Gauze dressing was applied. On February 3 patient was seen by physician and wound said to be

healing. February 6, the patient felt stiff and complained of throat and back being sore. February 9 stiffness increased and mouth could not be opened. Temperature, 99°. February 10 all symptoms increased, jaws set, risus and opisthotonos present, neck rigid. Antitoxin, 10,000 units, given subcutaneously. Later, generalized convulsions supervened. Death occurred on February 12, 1925. No history of other lesions.

Case 10.—White, female, age 8, schoolgirl, home conditions good; no animals on premises. Well when vaccinated. Primary vaccination on thigh half way between knee and hip on January 25, 1925. The area was cleaned with water, and an area ⅜ by ⅜ inch abraded. Virus B was applied. A bunion pad, glue-side down, was placed over the wound. This was covered with gauze held in place by adhesive. About "one week" later the pad was removed and the scab came with it, leaving a wound described as about the size of a 25-cent piece, not very deep, and with little redness or swelling. The child was first seen by the physician on February 15, complaining of sore neck and inability to open jaws. A diagnosis of tetanus was made. The symptoms developed rapidly—general rigidity, convulsions, etc. Death resulted on February 18. No history of any lesion other than vaccination. A twin brother was vaccinated at the same time by the same method and the vaccination progressed normally.

Case 11.—White, female, age 9, schoolgirl, home conditions poor. Child received primary vaccination on February 2. The arm was cleaned with 1:5000 bichloride, and alcohol was applied. Area about ⅜ by ⅜ inch was crosshatched with the needle and the virus, probably C's, was rubbed in. A bunion pad was then applied, glue-side up, and held in place by a broad strip of adhesive which completely closed the opening of the pad. Dressing was undisturbed for eight days, when it was removed by the physician and a gauze dressing applied. The child developed typical symptoms of tetanus on February 21 and died on February 23, 1925. Antitoxin was used. No history of any other abrasions.

SUMMARY

1. Eleven cases of postvaccination tetanus are reported following the use of bunion pads as a vaccination dressing.

2. Tetanus organisms were demonstrated in approximately 25 per cent of 200 pads of the same makes as those used on cases developing tetanus.

3. The 11 cases in which tetanus developed were all vaccinated by the scarification method; in 9 the vaccination was primary, while in 2 the vaccination history is unknown.

CONCLUSION

The facts revealed by this investigation (paragraphs 1 and 2) clearly indicate that the use of bunion pads as vaccination dressings should be strongly advised against.

STUDIES OF IMPOUNDED WATERS IN RELATION TO MALARIA

By E. H. GAGE, Associate Sanitary Engineer, United States Public Health Service

Standing water in ponds and swamps has long been associated with malaria. Many years before mankind knew what malaria was, or how transmitted, it had been observed that it was unhealthy to live in too close proximity to stagnant pools and swampy areas in temperate and tropical regions of the globe. It is only during the present generation that the connection between such bodies of water and the malarial fevers has been scientifically explained. This connection has been shown to involve (1) anopheline mosquitoes, which pass the first stages of life in such waters; (2) human beings in the vicinity, on whom the mosquitoes feed; and (3) the malarial plasmodium, which is imbibed by the mosquito while feeding, undergoes reproduction in her body, and then renders her capable of infecting with malaria many other human beings.

Soon after the facts concerning malaria transmission were established, the United States Public Health Service began the study of impounded waters in their relation to malaria transmission in the United States. These studies were first undertaken in 1914 and have been continued since that time, except for certain unavoidable interruptions such as that occasioned by the World War. The object of these studies has been to determine the importance of impounded waters in the transmission of malaria in potentially malarious regions of the United States and to discover what measures should be adopted in impounding and maintaining bodies of water in these regions to render them of least danger to the public health. Great progress has been made in both of these directions during the past 10 years. Bulletins have been issued by the Public Health Service from time to time dealing with the main problems of impounded waters, and regulations governing the impounding of waters have been outlined by service officers and adopted by practically all of the States which have to contend with this phase of the malaria problem.

It has been found that many factors must be considered in determining the potential danger of an impounded water project from a malaria standpoint. Size alone is certainly not the most important factor; the largest impounded water projects are frequently the least dangerous. Usually in the Southern States, the large bodies of

water are impounded for power purposes, the reservoirs being located in mountainous regions, with sparse settlements along their borders, and frequently do not produce anopheline mosquitoes in great abundance. Hence it can be seen that a small pond impounded on the outskirts of a village as a recreation pond, water supply, or stock pond, may prove to be a greater malaria menace than the much larger body of water many miles away in the mountains.

In the following report of studies which were conducted in the piedmont region of North Carolina during 1923, different types of ponds are included and an attempt is made to present a clear picture of the possibilities of malaria transmission in each case and to point out the precautions taken or which should have been taken in order to minimize this danger.

Water Supply Reservoir, Albemarle, N. C.

PHYSICAL CONDITIONS

Albemarle, the county seat of Stanly County, N. C., is located on the divide between the watersheds of the Yadkin and the Rocky Rivers, at an elevation of 700 feet above sea level. The water supply for the town is derived from Long Creek, a tributary of Rocky River. A dam across the creek at a point about 2 miles west of the center of town creates a storage reservoir of 105 acres. The water in the pond is normally clear. It is aerated, coagulated and settled, filtered, and chlorinated before delivery to the distribution system.

The surrounding topography is hilly, and the soil a silty, clay loam, is subject to considerable erosion. Much of the closer watershed is cleared and has recently been cultivated. Small wooded areas near by consist chiefly of second-growth pine and oak. The entering streams are little more than wet-weather drains, with the exception of Long Creek itself, which, above backwater, has a good flow through a rocky channel.

Normal precipitation is this locality is close to 48 inches a year. June, July, and August are the wet months, with a rainfall of about 5 inches in each, while September, October, and November normally have a rainfall of about 3 inches each. In 1923 there was an abnormal precipitation in March, with less than normal from June through October.

Monthly mean normal temperature at Albemarle reaches a maximum of 78.4° in July and is above 70° from about May 20 through September 20. Actual monthly means for 1923 were close to the normal. The average date of the last killing frost in the spring is April 12, and the first in the fall, October 23; but in 1923 the last temperature of 32° occurred on May 10, and the first in the fall on October 25. Average water temperatures at the surface of the

reservoir were found to exceed the mean actual air temperatures from July through October.

The immediate vicinity of the reservoir is sparsely populated, but the western border of the town of Albemarle is not over three-quarters of a mile from the dam. Many new homes are being built in this part of the town.

HISTORY OF RESERVOIR

The dam was completed on March 10, 1923, and water first ran over the spillway on July 30, 1923. There was not, however, a continuous gradual rise in water level during the interval between these dates. The creek channel above the dam is rather deep, and the water rose almost to the top of the channel banks, at which point it remained until the middle of July. At that time a series of heavy showers on the watershed caused a rapid rise to full reservoir.

The area flooded was incompletely cleared. The main body of the reservoir immediately above the dam was rather well cleared. Farther upstream, near the State highway crossing (Fig. 1), clearing was incomplete to the extent that trees and bushes were left standing, and still farther upstream the heavily overgrown banks of the creek channel and near-by bottom lands were entirely uncleared. Such clearing as was done was finished early in the spring of 1923, with the result that a rank growth of grass and weeds had come up before the water covered the area.

As previously stated, the reservoir has an area of 105 acres with the water standing at the crest of the spillway. There are large areas of shallow overflow, particularly on the right bank near the dam and on both banks above and below the State highway crossing. As an indication of the topography of these areas, it may be stated that the area of the water surface decreases from 105 acres to 24 acres in a 10-foot fall in level below the crest of the spillway. Field observations, without instruments, would indicate that approximately one-half of this 77 per cent decrease in water surface occurs in the first 2 feet of fall in water level. The shore line, except around these areas of shallow overflow, is fairly steep, but rarely could it be called abrupt.

HISTORY OF MALARIA

Malaria has existed in this vicinity in past years, scattered cases having been reported by the county health officer and local physicians. Some years ago there was a considerable amount of malaria in the town of Albemarle, according to popular report. More recently it has not been prevalent, a fact which is locally attributed to the straightening of Town Creek. During the summer of 1923 the county health officer reported slightly more malaria in

the county than usual, but none in the vicinity of the reservoir until late October, at which time its presence in three families near the reservoir was reported. Other physicians than the one attending these families reported no noticeable increase.

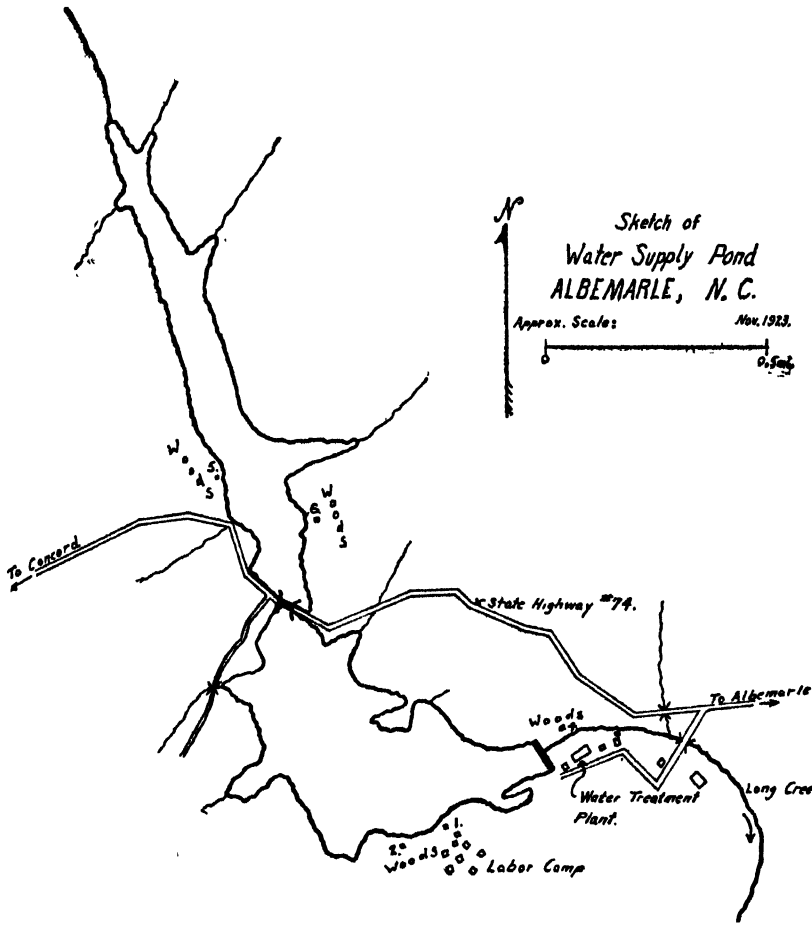

FIG. 1

FIELD OBSERVATIONS

The reservoir was first visited on July 19, 1923, and frequently thereafter until October 15, with a later visit on November 8. On July 19 the water level was within 1 foot of the crest of the spillway—the heavy showers which caused the rapid filling of the reservoir had occurred during the week immediately preceding. At that time the construction of the water-treatment plant was incomplete. About 30 negroes—the construction gang and families—were housed in shacks within 150 feet of the reservoir and above the dam. Foremen occupied shacks just below the dam. Both foremen and

laborers were imported and had been on work near Wilmington, N. C., during 1922, at which time there were stated to have been some cases of malaria in the gang. Sickness in the negro camp, diagnosed as typhoid, had caused one death on July 14. No report of malaria among the gang was obtained from attending physicians, although several of the laborers reported chills and complained of a serious mosquito nuisance. The labor camp was left vacant in mid-August. Adult *Anopheles quadrimaculatus* were found in the shacks on August 7 and continuously thereafter until September 17, after which date the shacks were removed. The operator at the water plant is housed about 1,000 feet below the dam. He reported two cases of malaria in his family during 1922. Gorged *A. quadrimaculatus* were found in his house on August 7, but certain changes and additions to the screening were immediately made and no specimens were found on later searches, although they were present in a near-by stable at each examination through October 9. The first *A. quadrimaculatus* emerged from a collection of larvæ made in the reservoir on August 14.

Larvæ of *Anopheles* and non-*Anopheles* were found along the edges of the reservoir at all times prior to November 8. The fact that the water level had been lowered about 2 feet early in November, uncovering the large areas of shallow overflow and exposing a reasonably clear shore line with little protection for larvæ should be considered, perhaps, the determining factor in the absence of larvæ on November 8.

At the time of the first visit, July 19, larvæ were not plentiful. The reservoir had filled during the previous week. The numbers of larvæ found rapidly increased, and from August 1 through October 9 they were present in abundance. There was a noticeable reduction in the number of larvæ on October 15. Throughout the period from July 19 to October 15, larvæ were found to be concentrated in spots, the spots of greatest prevalence remaining practically constant. It does not appear likely that there was any great difference in the vegetation or protection offered, since spots of great and slight larval prevalence were adjacent. Along the steeper banks, where the vegetation was more wiry in structure, the fewest larvæ were found, in general; whereas along the flat banks, where the vegetation formed a mat on the water surface, the greatest numbers of larvæ were found. No *Gambusia affinis* or other surface-feeding minnows were observed in the reservoir.

Full-grown larvæ and pupæ taken by dipping were saved for emergence; and of 211 emergences from collections made on 13 occasions in various parts of the reservoir, 20 per cent were *A. quadrimaculatus* and 80 per cent *A. punctipennis*. The first *A. quadrimaculatus* emerged from a collection made on August 14; the last from one

made on September 25. Outside the reservoir, in pockets of entering streams, in construction pools below the dam, and in pools of the stream bed below the dam considerable numbers of *Anopheles* larvæ were found. Emergences from collections made in such places were *A. punctipennis*, without exception. No other species of *Anopheles* emerged from any collection made in or outside of the reservoir.

Adult *Anopheles* were found in various resting places around the reservoir at each visit throughout the period from July 19 to October 15. *A. punctipennis* were always present, while the first *A. quadrimaculatus* was found on August 7 and the last on October 15. Late in August four boxes and a keg were located near the edge of the reservoir to serve as collection points for adult mosquitoes. Counts were made at each of these points on eight occasions between September 1 and November 8, with the following results:

Species	Males	Females	Total	Per cent
A. quadrimaculatus	20	14	34	24
A. punctipennis	54	56	110	76
Total	74	70	144	
Per cent	51	49		100

The percentages, by species, of adults caught in the immediate vicinity of the reservoir and of emergences from collections of larvæ and pupæ from the reservoir are shown in the following table:

	Total number	Per cent A. punct.	Per cent A. quad.
Adults caught	259	57	43
Emergences	211	80	20

No efforts directed primarily at the control of mosquito production were undertaken during the 1923 season. The level of the water in the reservoir was lowered 6 or 8 inches at various times and copper sulphate was applied at least once in attempting to get rid of tastes and odors which had developed in the water soon after the reservoir had been filled. These efforts produced no noticeable reduction in the number of larvæ present. The low water level was rarely maintained for a period longer than 24 hours, and thus did not give the uncovered shore line a chance to become thoroughly dry. Early in November the level was reduced about 2 feet preparatory to completing the clearing of the flooded area. This was not undertaken earlier, since a shortage of water during the dry season was feared.

COMMENTS

The situation at Albemarle is not unusual and is thought to present an excellent example of the intimate relation which may exist between different phases of public health work. That improvements in the water supply were badly needed was recognized by the entire community: yet there was some disagreement over the method best suited to obtain these improvements. Albemarle is in the piedmont section, at an elevation of about 700 feet above sea level; and while malaria is present, it is not particularly prevalent. It is, however, quite possible that, given an area suitable for the production of anopheline mosquitoes, an outbreak of malaria might occur. The impounding of a stream for water supply might create an excellent production area for anopheline mosquitoes.

Certain procedures tending to reduce the production of mosquitoes from impounded waters have been outlined by the United States Public Health Service. These procedures should be followed in all instances. They may be summarized briefly as follows:

(1) Clean banks.
  (*a*) Fluctuation of water level.
  (*b*) Removal of flotage.
(2) No aquatic vegetation reaching the surface of the water.
(3) A minimum area of shallow overflow at summer water level.
(4) Care of imported labor.
(5) Impounding of the water during the winter months.
(6) Introduction of *Gambusia affinis*.
(7) Occasional observation of the pond and its immediate vicinity.

These procedures are necessarily general, and the particular methods best suited to any one project can be determined only by a field survey. In the case of a water supply, the primary data of such a survey could well be collected at the time of the original sanitary survey of the watershed.

Hydroelectric Development, Badin, N. C.

PHYSICAL CONDITIONS

The Badin Pond (Fig. 2) is located on the Yadkin River, principally in Montgomery and Stanly Counties, N. C., with the extreme upper end of the eastern arm extending into Davidson County. The pond is formed by a concrete dam about 200 feet in height, located at a point known as The Narrows and at an elevation of approximately 550 feet above sea level. When the water level stands 1 foot below the top of the spillway gates, the flooded area is 5,570 acres. The project is operated for the production of electric power, part of which is used locally in the reduction of aluminum ore.

The topography in the region is hilly to rough, generally wooded in second-growth pine and oak. The soil is silt loam and slate loam, with numerous rock outcrops, and a clay subsoil. There is considerable erosion, and the water in the pond is highly turbid at all times. Farms are small and scattered. Wheat and corn are

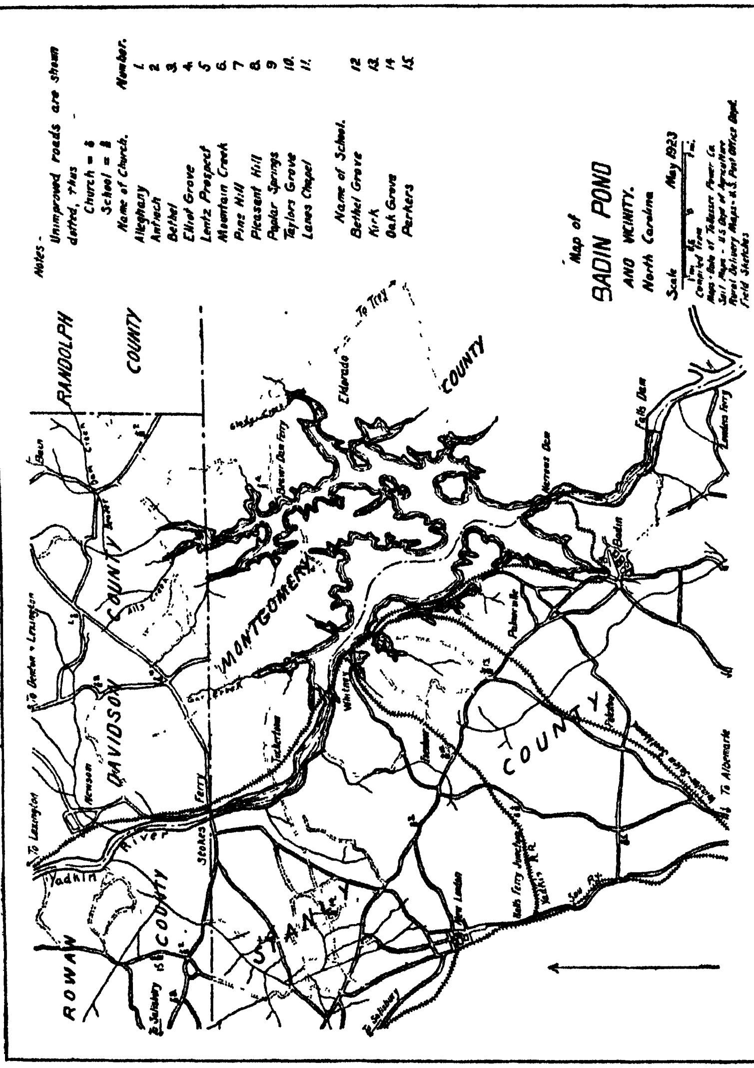

FIG 2

40 22

the chief crops grown. The majority of the entering streams are small and either completely dry or consist only of puddles in dry weather. Four larger streams should be mentioned: Gar Creek, Alls Creek, Beaver Dam Creek, and Glady Creek. These have good fall, sandy to rocky channels, and fair flow even in very dry weather.

Annual normal precipitation on the watershed [1] is 48.96 inches, with a definite peak (5.63 inches) in July. This peak gives rise to what are known as the July floods, which may be expected to maintain a full pond through that month. Precipitation in 1923 reached an abnormal peak (7.29 inches) in March, and was below normal from June through October.

Temperatures reported for Albemarle may be applied at this pond. Albemarle is the nearest observation station, and is 6 miles southwest of Badin.

The groups of population in the vicinity of the pond are very scattered. Badin, population about 3,000 is located at the extreme southern end; Palmerville, population about 50, is located on the west side of the pond 2 miles north of Badin; Whitney, population about 20, also on the west side, 6 miles north of Badin; and Tuckertown, a mill village, population about 200, is located on the east bank of the river at the head of backwater. In the vicinity of Beaver Dam ferry and north of this point is a small farming community containing about 75 people. Other than these there are very few people within a mile of the pond.

HISTORY OF PROJECT

The dam was completed and the water impounded during the summer of 1917. There was a large amount of clearing done in the area before the dam was closed. The southern end of the area and the bights along the river were completely cleared of trees and brush. The Beaver Dam section, that forming the eastern arm of the "Y," was not cleared or was only partially cleared. In this uncleared portion the trees have been killed by the water and present a very unsightly tangle. The psychological effect of this condition is believed to have been unfavorable in the extreme. As the trees died, the bark slipped off and the smaller limbs dropped; and recently many tree trunks have fallen. Some of the débris has been washed ashore and stranded; more of it has been held off by standing timber until it has become waterlogged and has sunk. Bark and small twigs sunk in this manner become sufficiently dry when exposed during periods of low water to float again on a rising pond. The result is that, at full pond, and with a rising pond, the water line in this section is heavily coated with flotage and presents a condition which appears to be favorable for mosquito larvæ. The upper ends of many of the well-cleared bights at the southern end of the pond and along the river contain large piles of drift. The greater part of this drift is brought down the river in floods and blown into the bights by the prevailing southwest wind.

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[1] Average of 7 stations: Salisbury, Statesville, Settle, Winston-Salem, Elkins, Brewers, and Mount Airy.

The area of shallow overflow is not large. West of the railroad at Whitney, and near Tuckertown, are the two largest of these areas, and at the upper ends of the forks at the north end of the pond are small areas with less than 2 feet of water cover at full pond. The greater part of the shore line is steep and in some instances abrupt. As an indication of the type of shore line, it may be stated that in the first 10 feet of fall in water level below full pond there is a reduction of 763 acres, or 14 per cent, in the flooded area.

HISTORY OF MALARIA

Malaria has existed in the region for many years, particularly along the river. This is stated by practically all residents and local physicians. Statements as to the extent of the disease vary considerably, but the general impression gained is that it was not at all uncommon. More recently, and particularly since the pond was filled, there has been much complaint of malaria in the vicinity of the north end of the pond. The chief cause of this complaint appears to be that the disease is now present among people living on the higher land. In this connection it is well to remember two changes that have been brought about by the pond: (1) Those of the original bottom-land families who have not left the region now live on the higher land; (2) the flooding of the bottom land has driven the farming operations onto the less fertile, more readily scoured, hillsides. No attempt was made to take a malaria history census of the region, as it appeared early in the season that the information so obtained would not be reliable. Malaria and the pond have come to be synonomous in the minds of a majority of the residents here. There is no complaint of malaria at Badin or at Palmerville.

FIELD OBSERVATIONS

The pond was first visited on April 5, 1923, and frequently thereafter through October 16, 1923. During the first half of April there were found in the flotage in small bights west of the railroad near Badin considerable numbers of small and half-grown larvæ, both *Anopheles* and non-*Anopheles;* and in pond bights near Beaver Dam Ferry, full-grown larvæ and pupæ of *Anopheles* were plentiful. After the middle of April, small *Anopheles* larvæ, as well as full-grown larvæ and pupæ, were found in pond bights, but in diminishing numbers until the first of June. From then on, larvæ in the pond were rare. Adults caught and emergences from collections of larvæ and pupæ made in the pond during the month of April were exclusively *A. punctipennis*. During May and early June, a few pupæ from which *A. crucians* emerged were collected from widely separated parts of the pond. The first of these emerged from a

Collection of drift at upper end of a river bight, Badin Pond

Uncleared section north of beaver dam ferry, Badin Pond

collection made on May 9. No specimens of *A. quadrimaculatus* emerged from pond collections until September 4. Adults of *A. punctipennis* were readily found near the pond in April and early May, after which time but few were found. The first adult found was a male, resting just above a spring, on April 5.

The percentage, by species, of adults caught in the immediate vicinity of the pond, and of emergences from larvæ and pupæ collected from the pond, are shown in the following table:

	Total number	Per cent A. punct	Per cent A. quad	Per cent A. cruc
Adults caught	68	82	12	6
Emergences	131	90	3	7

Aquatic plants around the shore line of the pond are rare. There is a small area of cat-tail growth and some willow near Tuckertown. The alga *Anabæna*,[1] a hairlike growth not clinging together but completely covering the water surface at the heads of some bights, appeared late in July and persisted until the middle of September, after which time but few small patches were seen. This growth did not inhibit the development of larvæ in the laboratory, although no larvæ were found in it in the pond. Other alga of the clinging type, *Spirogyra*, appeared early in September in small amounts. This alga was most frequently found binding together small collections of bark or twigs, and often sheltered larvæ. It was from such an alga-bound flotage patch that the first *A. quadrimaculatus* larvæ was taken from the pond, September 4.

Gambusia from a local hatchery have been placed in the pond in large numbers. Up to the first of July only a few of these fish were seen. After this time the numbers rapidly increased, and by the last of the month they were found in great numbers, particularly near the upper ends of the bights.

Outside the pond, in various springs, spring branches, stream pools with grassy edges, stream channels above backwater and below high-water line, and in the *Gambusia* hatchery (which was badly grown up in grass and weeds), larvæ of *Anopheles* and non-*Anopheles* were found throughout the season. Emergences from collections made in these places were exclusively *A. punctipennis* (with the exception of the hatchery, from which *A. crucians* and *A. quadrimaculatus* were also obtained, and adults of these species were found resting under a vacant house near by). In fact, the first specimen of *A. quadrimaculatus* found in the region was caught under this house on August 6, and one emerged from a collection of larvæ made at

[1] Identified by Special Expert W. C. Purdy, United States Public Health Service.

the hatchery on the same day. (It is of interest to note that the first specimens of this species were found near the Albemarle water supply reservoir, 6 miles southwest of Badin, on August 7.)

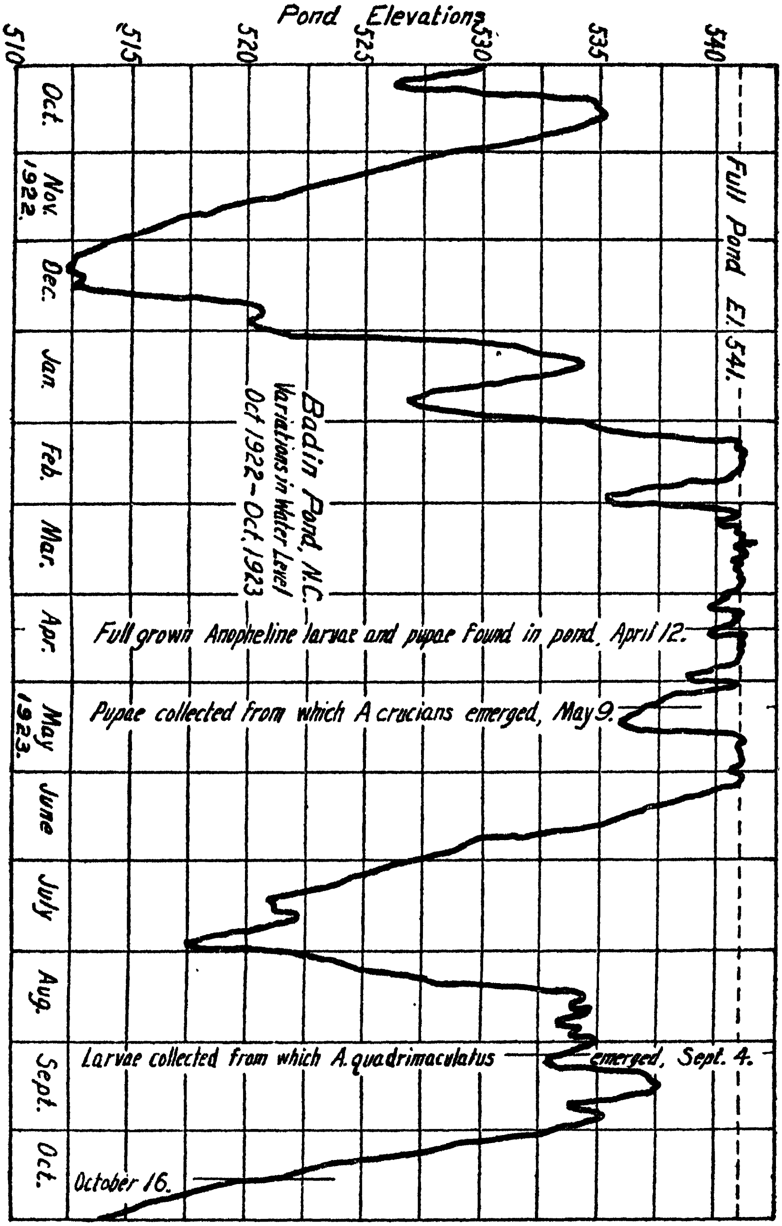

FIG. 3

From the conditions as observed and from inspection of the recorded variations in water level from 1917 through 1923, it appears that the governing factor in the presence or absence of mosquito larvæ in this

pond is the variation of the water level. In Figure 3 are shown the variations in water level from October, 1922, through October, 1923. The shore line near full pond is very trashy and strewn with bark and small twigs. When this is floated, protection for larvæ exists; and when full pond is maintained for a sufficient length of time during the mosquito-production season, larvæ may be expected. During 1923 the pond started to fall in early June (Fig. 3), stranded the drift and flotage, and presented a clear shore line. The July floods did not materialize, and it was August before the pond started to rise. During the period of low water much of the formerly water-logged bark and fine material had become thoroughly dried out. When the rising water reached this, a large amount of it floated. It was in collections of this sort that a few *Anopheles* larvæ were found in September and early October, from which emerged the only specimens of *A. quadrimaculatus* from pond collections. This refloated material was stranded in October as the pond fell, and no larvæ were found in the pond on the 16th of that month. There was little protection for them at that stage of the water. During the period of low water a large amount of clearing and burning of drift was done near high-water line.

COMMENTS

Here is a large pond which, in its seventh year, did not produce anopheline mosquitoes in sufficient numbers to be of any sanitary importance. It has been accused of causing an increase in the prevalence of malaria. Damage suits have been filed on this basis. The very fact that such suits are pending has influenced the attitude of the residents toward the pond.

The creation of this pond has changed the entire existence of a rural section. About 9 square miles of the most fertile land have been permanently flooded. Farmers owning and living on high ground and leasing bottom land to farm found themselves with only poor land from which to gain a living. Some homes were submerged and others were surrounded by the water. Churches and cemeteries were moved; roads were relocated or abandoned; and in one instance travel to the county seat was made possible by the installation of a ferry. A large industrial plant and its community have replaced farm and wood land.

An enormous amount of clearing was necessary in the area to be flooded. As is often the case, this work was started just above the dam and near the industrial plant at the southern end of the area, and was well done there. It was not completed at the head of backwater in the northeastern end of the area, a fact which caused considerable discontent among the inhabitants of the hillsides to the north. This feeling was increased in the next few years by the unsightly tangle presented by the water-killed timber. The clearing is now

being completed with considerable difficulty and limited by the changing stage of the water level.

It seems obvious that there is real economy in completing the preparation of the area to be flooded before the water is impounded.

Hydroelectric Development, Bridgewater, N. C.

PHYSICAL CONDITIONS

The Bridgewater Pond is located in Burke and McDowell Counties, N. C., and is formed by three dams—one on the Catawba River, one on Paddy Creek, and one on the Linville River. It is, therefore, composed of three main arms, each with numerous bights, and has a total flooded area of 6,510 acres with the water standing at the crest of the spillway, the elevation of which is 1,200 feet. The water in the pond is clear. The surrounding territory is hilly to mountainous, rather heavily wooded, and the population is sparse.

Precipitation records, kept at the Linville Dam since May, 1919, indicate an annual total of about 54 inches, with more than 5 inches in each month from March through August, followed by a sharp decline in the next three months.

Monthly mean normal temperature at Marion (the closest Weather Bureau observation station, about 12 miles from the pond) reaches a maximum of 75.2° in July and is above 70° from about June 1 through August 20. Actual monthly means for 1923 were close to the normal. The average date of last killing frost in the spring is April 17 and the first in the fall October 24, but in 1923 the last temperature of 32° occurred on May 9 and the first in the fall on November 1. Surface temperatures in the pond varied from 82° to 86° in mid-August, 1923.

HISTORY OF PROJECT

The project was completed in January, 1920, and water first ran over the spillway on May 4, 1922. The flooded area was well cleared. There is no brush or timber standing below high-water line.

The shore line of Catawba Pond is generally steep and free from trash. There is an area of shallow overflow at full pond near the upper end on the left bank which has grown up in grass and weeds. At the upper ends of some bights are flat areas supporting grass and aquatic growths. The shore line of Paddy Creek Pond is mostly steep and clean, with little or no trash in the bights. At the extreme upper end of the south fork of this pond is a shallow grassy area. The Linville Pond has a more gently sloping shore line, wider bights, and more trashy edges than the other ponds.

Around the pond, and at varying distances from it, is a highway in the construction of which considerable fill was necessary in various gulleys leading to the pond. Almost invariably the culverts through

these fills were placed too high to drain the gulley above the road. There has resulted a series of pools, fringed with willow and filled with cat-tail and aquatic growths.

The construction of the project has diverted the flow from the bed of the Catawba River to the Linville River, with the result that the old Catawba Channel is a series of pools and seepage areas for a distance of at least a mile below the dam. Here a considerable growth of cat-tail and algæ flourishes.

FIELD OBSERVATIONS

Two inspections of this pond were made in 1923—one early in July, the other in mid-August. At the time of the July inspection the water level was about 5 feet below the spillway and had only recently started to fall. In August it was down between 7 and 8 feet.

The area of shallow overflow at the upper end of the Catawba Pond was exposed both in July and August. In the grass and aquatic growths at the upper ends of bights occasional small and half-grown *Anopheles* larvæ were found at the time of each visit, chiefly near the mouths of entering streams. In the shallow, grassy area at the upper end of Paddy Creek Pond a few half-grown *Anopheles* larvæ and many small ones, as well as some non-*Anopheles* larvæ, were found. In three bights of the Linville Pond, each with trashy edges, only a few small larvæ were found, *Anopheles* and non-*Anopheles*. No *Gambusia* were seen in the pond at either visit.

The pools above the highway surrounding the pond were found to contain larvæ in large numbers both in July and August, but there were more non-*Anopheles* than *Anopheles*. Below the dam, in the old Catawba River Channel, larvæ and pupæ of both *Anopheles* and non-*Anopheles* were found, particularly in seepage, and were more numerous in July than in August. The algæ in these pools were much more profuse in August than in July, and some of the pools were full of dead algæ in August. Emergences from collections of larvæ and pupæ made at these pools at each visit were *A. punctipennis*, with the exception of one female *A. crucians* which emerged from the August collection. No search was made here for adults in July, but in August near-by resting places were searched and yielded three *A. punctipennis* and one female *A. quadrimaculatus*. The latter was found resting under the overhanging turf at the top of a sandy bank about 150 yards below the Catawba Dam and on the right bank of the river.

Borrow pits along the railroad near the Bridgewater station yielded larvæ of non-*Anopheles* only, and a seepage area between the railroad and the hill, with water temperature of 75° in August,

yielded no larvæ whatever. Pockets in small streams in the vicinity of the pond were found to contain considerable numbers of *Anopheles* larvæ. Adults caught in near-by resting places were *A. punctipennis* without exception.

The water level in this pond changes gradually, rising from February to May or June, then remaining fairly constant, close to full pond, until early August, followed by a gradual fall to January or February. The maximum change in level recorded has been 53.9 feet. This cycle has been repeated in each of the four years since the pond was formed, and may be considered as normal behavior, since the pond is primarily a storage reservoir for the benefit of plants lower down the river. The fact that the change in water level is gradual might be expected to be favorable for mosquito production, but the shores are generally so clean as to present little protection for larvæ. The rather heavy rainfall from May through August, causing the frequent washing out of entering streams, may account for the presence of larvæ in the pond, as it was rare that they were found far from the mouths of streams.

COMMENTS

This pond, located in the mountains of North Carolina, with clear water, without unsightly water-killed timber, stocked with game fish, and circled by a good highway, attracts great numbers of visitors in the summer months. It has added materially to the natural beauty of the region, quite aside from its economic value in tending to equalize the flow of the Catawba River through the piedmont and in the production of electric power.

Observations during 1923 indicate that the production of anopheline mosquitoes from the pond was slight. The pools below the Catawba Dam and those caused by the improper placing of culverts along the encircling highway appear to be the chief potential sources of these mosquitoes. This, then, seems to be an example of the need to consider the territory adjacent to the pond, as well as the flooded area itself, in seeking to prevent conditions due to the impounding of water, which may cause an increase in the production of anopheline mosquitoes.

Hydroelectric Development, Mountain Island, N. C.

PHYSICAL CONDITIONS

The Mountain Island project, completed in January, 1924, is located on the Catawba River in Gaston and Mecklenburg Counties, N. C., 12 miles northwest of Charlotte. The pond is 16 miles long and easily a mile wide at several points. There are numerous bights,

some of which leave the pond through a narrow neck and widen beyond with areas of shallow overflow at the upper ends.

The topography of the area is rolling, the soil is sandy, with clay subsoil, and the territory generally is under cultivation and rather well settled. Small streams entering the area have good fall and sandy beds in most cases. Precipitation and temperature recorded at Charlotte and Mount Holly are similar to those at Albemarle and Badin.

HISTORY OF MALARIA

Malaria, as reported by the county health officers and local physicians, is present, but not to any great degree. Individual cases are scattered through the district. One small focus was found in the immediate vicinity of two brickyards just west of the town of Mount Holly and about 4 miles from the dam. The labor employed on the construction of the project, both white and colored, was largely imported from other sections of the South. Some histories of malaria were found among them, with a few relapses reported in the spring of 1923. A small number of cases were reported in September.

FIELD OBSERVATIONS

The area was visited in July, August, and September, 1923. The construction camp was located on the hill on the right bank of the river just below the dam and housed about 500 people, including employees' families and 100 white convicts. Sanitation at the contractor's camp was poor. The quarters consisted chiefly of the abandoned houses of a mill village (the mill had been destroyed by the flood of 1916 and not rebuilt), partly of tar-papered three-room shacks, and partly of tents. The water supply was obtained from three wells and a spring at the foot of the hill below the camp, entirely unprotected from surface drainage. Pit privies were scattered all over the hillside. Screening was incomplete and haphazard—12, 14, and 16 mesh being observed. The convict camp was in much better condition. Quarters were of barrack type, screened with 14-mesh (except for the ventilators on the roof, the screens of which were said to have become dust clogged to such an extent as to stop the circulation of air and were therefore removed); the water supply was derived from a driven well across a ravine from the contractor's camp; the privies were of the can type; and the whole camp was regularly policed. Various areas suitable for the production of mosquitoes in the vicinity of the camp and dam were found to yield larvæ of *Anopheles* and non-*Anopheles* in some numbers. Emergencies from collections of larvæ, as well as all adults caught, were *A. punctipennis*.

The raising and lengthening of a steel bridge about 3 miles above the dam was a part of the project. A small camp back from the right bank of the river at the bridge was maintained for the labor on this work. In pockets of small streams near by a few small larvæ of *Anopheles* were found, but no adults either at the camp or in natural resting places in the vicinity. About a quarter of a mile above the bridge on the right bank of the river was a swampy pasture. Here larvæ and pupæ of *Anopheles* and non-*Anopheles* were found in considerable numbers. Emergences from collections made here were all *A. punctipennis.*

It was also necessary to construct a new water pumping station for the city of Charlotte as a part of this project. The new station is on the left bank of the pond and about 2 miles above the bridge just mentioned. Here another small camp was maintained. No larvæ were found in a near-by stream, although water containers at the camp were found to be producing non-*Anopheles* profusely. No adult *Anopheles* were found in the tents. Just north of the road leading to the pumping station, and about half a mile from the pond, is a swampy gully. Here were found larvæ of non-*Anopheles* in great numbers and some *Anopheles* in July, although no adults were found in a near-by cow shed.

Clearing of the area to be flooded was rather well done and was completed in the spring of 1923. The operating company established a medical department at the beginning of the summer, with the prevention of the production of anopheline mosquitoes at Mountain Island as its chief duty. Under the direction of this department, that portion of the basin near the flow line was recleared later in the summer to remove such small brush and weeds as had grown up since spring.

The establishment of small ponds just above the high-water line to act as distribution points for *Gambusia* was started in August. These ponds were so located as to be easily accessible by highway and by boat after the area is flooded. Large numbers of gravid fish were obtained through the cooperation of the United States Bureau of Fisheries. Near one of these ponds was a small swampy area in which numerous larvæ of *Anopheles* were found. All emergences from collections of these larvæ were *A. punctipennis*, as were all adults caught, with the exception of one specimen of *A. crucians* found in an upturned molasses vat.

Considerable numbers of larvæ of *Anopheles* were found in pockets of streams entering the area, in various swampy areas, and in small pools in the river bottom. Emergences from collections of larvæ made in such places, as well as all specimens of adults caught in the vicinity, were invariably *A. punctipennis*. At the brickyards near Mount Holly larvæ of *Anopheles* and non-*Anopheles* were found

in great numbers in old clay pits grown up in cat-tails and containing much algæ. Emergences from collections of larvæ made here were *A. punctipennis*. A few adults, both *A. punctipennis* and *A. quadrimaculatus*, were found in a near-by stable. None was found in natural resting places nearer the production area. This point was visited in September, on the first cold day of fall, which may account for the scarcity of adults in apparently favorable resting places.

COMMENTS

This pond is located in a section in which malaria is not considered prevalent, in which industrial development is progressing rapidly, and close to one of the largest cities of North Carolina. It may, therefore, be expected that many people will visit the pond and that the surrounding hillsides will become the site of summer camps and clubhouses.

The area to be flooded was well cleared, particular attention was given to that part near the flow line which was cleared twice; distribution points for *Gambusia* were established; the water was impounded during January, and continued observation of the pond was provided for. There seems to have been no attempt made to protect the imported labor, yet no increase of malaria was reported in the fall of 1923. It would appear that unusual efforts have been made to prevent an increase in the production of anopheline mosquitoes resulting from the impounding of this water.

CURRENT WORLD PREVALENCE OF DISEASE

REVIEW OF THE MONTHLY EPIDEMIOLOGICAL REPORT FOR MAY 15, 1925, ISSUED BY THE HEALTH SECTION OF THE LEAGUE OF NATIONS' SECRETARIAT[1]

Current morbidity and mortality reported to the Health Section of the League of Nations' Secretariat in the month preceding the publication of the Monthly Epidemiological Report of May 15 showed no change in the generally favorable health situation which had prevailed in many parts of the world during the preceding months. For the most part, only the normally expected variations have occurred in the prevalence of the various diseases referred to each month in the report.

Plague.—Plague cases reported indicate a lower prevalence than for several years past for the corresponding season in practically all localities, with the marked exception of Java, where cases have been unusually numerous. The incidence in Java has been diminishing since January, but the deaths reported for four weeks ending February 25 numbered 1,562—twice as many as in February, 1924.

[1] From the Statistical Office, United States Public Health Service.

The increase in the deaths from plague in India for the first half of March was slight for this season, and the 16,212 deaths from this disease reported in the four weeks ended March 14 were only one-half the number for the same period last year. "The improvement is greatest compared with last year in the Punjab and the Middle Ganges Valley, and the incidence is relatively low also in Burma and the Presidency of Bombay." The highest number of deaths was reported in the United Provinces.

Hongkong has been free from plague since September, 1923.

The plague situation in the Mediterranean ports and near-by areas is stated as follows:

"No case of plague is known to have occurred in any port in the Mediterranean or Black Sea in February, March, or April.

"In Egypt, where no case had been reported in February or March, there were 9 cases between April 1 and 22, of which 2 were in Suez. No new case was reported during the following week. This is remarkable, in view of the fact that plague usually reaches its maximum prevalence in May in Egypt and neighboring countries.

"There has been no case of plague in Palestine and Syria since the beginning of the year and only 2 cases in Iraq (during the fortnight ending April 14), where the disease existed in epidemic form at the corresponding season of the two preceding years."

Very few cases of plague have been reported lately from Africa. The outbreaks in Nigeria and the Gold Coast appear to have come to an end, and the Union of South Africa reported only 7 cases in the 3 weeks ended April 4. Mauritius seems to be practically free from plague, only 1 case having been reported there in 5 weeks, and in Madagascar there were fewer cases in March than in February. Only in Uganda is an increase noted: 73 deaths were reported in March compared with 27 in February.

Cholera.—Cholera incidence declined in India during the 4 weeks ended March 14, during which period 4,661 deaths were reported as compared with 5,780 deaths during the preceding 4 weeks. The decline occurred almost entirely in Madras Presidency. The same number of deaths occurred last year at this date.

Ceylon, Indo-China, and Siam also reported a few cases, and Singapore reported 1 case between April 12 and May 9. "No case has been reported this year from any locality west of India."

Typhus and relapsing fever.—"The incidence of typhus remains unusually low throughout eastern Europe; the maximum appears to have occurred early in the year, as is frequently the case when the prevalence is diminishing rapidly.

"Relapsing fever is practically disappearing from all its old centers.

"The most important outbreak of relapsing fever during recent months was that in Nigeria, where the disease is said to have been

imported in 1923 and where it caused considerable mortality in 1924. In January of the current year 42 cases were reported, and in February, 394, whereas no case occurred during the corresponding months of 1924."

Smallpox.—In Algeria and Tunis, where small outbreaks of smallpox have occurred, the number of new cases was on the decline in April. In Algeria, the maximum number occurred in January, with 170 cases, and the number declined to about 100 per month in March and April. The maximum came later in Tunis, with 206 cases in March, followed by a decline to 129 cases in April.

In England 630 cases of smallpox were reported during the 4 weeks ended May 2, compared with 550 cases during the preceding 4 weeks. It continued to be the same mild type previously noted.

Smallpox has increased in India during the last two years. "The highest incidence has occurred in southern India - last year in Bombay Presidency, this year in Madras Presidency; but, although northern India remains less seriously infected, an increase is seen in the returns for these Provinces also, especially in Bengal and Bihar and Orissa."

TABLE 1.—*Cases of smallpox in the Provinces of India, January 18 to March 14, 1925*

Province	1925		1924
	Jan 18 to Feb 14	Feb 15 to Mar 14	Feb 17 to Mar 15
Northwest frontier	11	10	8
Punjab	576	402	167
Delhi	0	0	0
United Provinces	63	185	15
Bihar and Orissa	2,434	2,913	1,846
Central Provinces	887	1,631	429
Madras Presidency	4,518	5,705	2,573
Hyderabad State	566	40	35
Bombay Presidency	2,352	3,859	11,918
Bengal Presidency	2,517	3,783	815
Assam	116	200	101
Burma	779	1,410	682
Other Indian States	29	170	357
Total	14,841	20,351	18,948

Nigeria reported a sudden increase from 12 cases of smallpox in January to 409 in February.

Enteric fever.—The incidence of enteric fever declined markedly during the winter and early spring months in the European countries where a relatively high prevalence was reported in the late autumn of 1924.

TABLE 2.—*Cases of enteric fever notified in various European countries in 1923 and 1924, and beginning of 1925*

Month	Sweden		Finland		Latvia		Czechoslovakia		Bulgaria	
	1923-24	1924-25	1923-24	1924-25	1923-24	1924-25	1923-24	1924-25	1923-24	1924-25
May	67	42	109	54	67	73	255	322	91	32
June	69	78	100	53	80	140	287	476	63	72
July	46	131	262	75	76	227	390	645	82	134
August	90	213	137	178	127	243	508	805	163	264
September	86	257	156	221	101	236	771	690	332	606
October	64	249	280	499	113	129	775	805	464	1,883
November	67	91	159	333	78	124	701	807	522	2,122
December	47	80	90	123	89	90	518	602	499	1,432
January	66	93	29	146	77	98	510	514	244	611
February	63	77	36	87	83	62	361	454	162	241
March	93	40	26	84	85	--------	351	335	110	142

Four weeks ending—	England and Wales		Germany		Poland		Kingdom of Serbs, Croats, and Slovenes		Italy	
	1923-24	1924-25	1923-24	1924-25	1923-24	1924-25	1923-24	1924-25	1923-24	1924-25
June 14	177	369	725	722	686	605	87	122	873	820
July 12	253	578	1,049	1,125	723	715	147	159	1,210	1,432
Aug 9	309	386	1,289	1,680	805	1,060	262	298	2,300	2,153
Sept 6	341	376	1,620	1,967	1,025	1,546	348	471	4,109	3,469
Oct 4	416	451	1,660	1,890	1,500	2,374	584	1,113	4,816	3,932
Nov 1	370	422	1,376	1,545	1,904	2,428	498	1,268	3,777	3,416
Nov 29	235	242	1,410	1,104	1,541	2,212	472	1,107	3,231	3,137
Dec 27	218	247	1,153	816	1,234	1,549	398	650	2,190	1,790
Jan 24	204	162	778	723	951	1,312	287	376	1,441	1,015
Feb 21	218	172	733	641	918	1,004	217	266	935	711
Mar. 21	156	152	608	549	665	925	172	206	651	--------
Apr 18	174	143	656	--------	596	--------	134	--------	634	--------

Influenza.—"The comparatively low incidence of influenza in most countries during the first period of 1925 is reflected in the general death rate, which is more favorable than that of the early months of 1924," states the report. The number of deaths from influenza in "105 English cities" has been diminishing since the beginning of March and reached the low figure of 100 in the week ended May 2. In the "46 German cities," however, influenza deaths increased during March and the first part of April, with 281 deaths from this cause reported in the 2 weeks ended April 11.

Lethargic encephalitis.—No marked epidemics of lethargic encephalitis are indicated, but "a certain prevalence is reported from most European countries." Fifty-four cases were reported in the Netherlands for the 8 weeks ended April 26, compared with 19 cases in the previous 8 weeks. Czechoslovakia reported 40 cases in March and 25 in February, and in Italy an increased incidence occurred in February and March. In England and Wales the incidence was somewhat lower in April than in March, but the fluctuations in the last 9 months have been less than usual.

Poliomyelitis.—The outbreaks of poliomyelitis in New Zealand, noted last month, continued at about the same level during March, 395 cases having been reported during the 4 weeks ended March 23

and 409 cases during the preceding 4 weeks. The incidence in the province of Wellington declined in March, but more cases were reported from the other provinces. The report notes: "The disease is stated to have mostly attacked children between 2 and 3 years of age; the incidence was higher in rural districts and the more congested city areas escaped lightly. Good results are claimed from treatment by injection of serum obtained from convalescent cases."

Cerebrospinal meningitis.—No epidemic prevalence of cerebrospinal meningitis is noted in the reports of any country of Europe or North America in the past winter.

An outbreak occurred in Nigeria in February, with 376 deaths reported, and in Uganda 80 cases were notified in February.

Scarlet fever and diphtheria.—Both scarlet fever and diphtheria continued to be more prevalent in western and central Europe in March and April than at this season last year, while the incidence has been relatively low in eastern and southeastern Europe.

Measles.—A recrudescence of measles in March in all countries for which information was available is noted by the report. "The increase is smaller than at the corresponding season of 1921 in Great Britain and Denmark, but greater in France, Hungary, Bulgaria, Poland, and Italy."

The following details of a severe epidemic in Nyasaland in February are given:

"The first 24 cases were reported in the district of Chikwawa, where 29 cases occurred in February. The disease appeared suddenly in the district of Lilongwe in February, when 1,850 cases were reported; there have been no cases, so far, in other districts with the exception of 2 in Blantyre. The case mortality is unusually high and is stated to be 7.3 per cent in Lilongwe."

Trachoma.—The following data on the prevalence of trachoma are given in the report:

Country	Quarter I	Quarter II	Quarter III	Quarter IV	Total 1924	1925 I
Germany	288	454	528	514	1,784	487
Austria	90	50	58	226	424	175
Danzig	8	6	15	25	54	9
Esthonia	161	121	102	147	531	142
France		38	12	8	58	8
Poland	496	870	940	638	2,944	940
Dominican Republic	1	0	4	5	10	[a] 0
Switzerland	3	1	6	3	13	[b] 2
Czechoslovakia	766	804	644	508	2,782	651
Saar Territory	0	1	0	2	3	4
Tunis	45	54	0	24	123	24
Ukraine	6,172	11,529			[c] 17,701	
United States (21 States)	257	841	351	448	1,897	282
Panama Canal Zone	1	0	3	0	4	0
New Zealand	11	2	2	5	20	
Turkey						[b] 162

[a] For February only. [b] For 12 weeks only. [c] For 2 quarters only.

UNITED STATES CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following open competitive examinations:

PHYSIOTHERAPY AIDE—PHYSIOTHERAPY PUPIL AIDE—PHYSIOTHERAPY ASSISTANT

Receipt of applications for these positions will close July 25, August 29, September 26, October 24, and November 28, 1925. The dates for the assembling of competitors will be stated on the admission cards sent applicants after the close of receipt of applications.

In the Public Health Service the entrance salary for physiotherapy aide is $1,020 a year, with quarters, subsistence, and laundry; for physiotherapy pupil aide, $720 a year, with quarters, subsistence, and laundry, or $1,200 a year without allowances. The salary of physiotherapy assistant is $1,500 a year, without allowances.

In the Veterans' Bureau the entrance salary for physiotherapy aide is $1,680 a year; for physiotherapy pupil aide, $1,000 to $1,400 a year, depending upon the training and experience of the appointee. The compensation of physiotherapy assistant is $1,320 to $1,600 a year.

The duties of physiotherapy aides consist of administering physiotherapy in its several branches—massage, electrotheraphy, hydrotherapy, mechanotherapy, thermotherapy; active, passive, resistive, and assistive exercises and remedial gymnastics; keeping daily record of the work and progress of each and every patient coming under direction and treatment; and making the required reports of the activities of the reconstruction work in physiotherapy.

The duties of physiotherapy pupil aides are the same as those for physiotherapy aide, except that they are pupils under the supervision and instruction of the chief aide in all the work above mentioned.

The duties of physiotherapy assistants consist of administering to special patients the treatments of physiotherapy, as massage, electrotherapy, hydrotherapy, thermotherapy, mechanotherapy; active, passive, assistive, and resistive exercises; remedial gymnastics; keeping a daily record of the work and progress of each patient under the appointee's direction and treatment; and making the required reports of the activities of the reconstruction work in physiotherapy.

GRADUATE NURSE—GRADUATE NURSE (VISITING DUTY)

Applications for graduate nurse and graduate nurse (visiting duty) will be rated as received until December 30, 1925. The examinations are to fill vacancies in the United States Veterans' Bureau and in the Indian and Public Health Services.

The usual entrance salaries for these positions are $1,500 a year, with quarters, heat, and light, in the Indian Service; $1,020 a year, with quarters, subsistence, and laundry, in the Public Health Service; and $1,680 a year in the Veterans' Bureau.

Applicants for the position of graduate nurse must have been graduated from a recognized school of nursing requiring a residence of at least two years in a hospital having a daily average of 30 patients or more, giving a thorough practical and theoretical training, and must show evidence of State registration.

In addition to the requirements for graduate nurse, applicants for the position of graduate nurse (visiting duty) must have had at least four months' postgraduate training in public-health or visiting nursing at a school of recognized standing, or, in lieu of such training, one year's full-time paid experience under supervision in public-health or visiting nursing.

Competitors will not be required to report for examination at any place, but will be rated on their education, training, and experience.

DIETITIAN

Applications for dietitian will be rated as received until December 30, 1925. The examination is to fill vacancies under the Public Health Service at an entrance salary of $1,020 a year, with quarters, subsistence, and laundry, and under the Veterans' Bureau at an entrance salary of $1,680 a year. In the Public Health Service advancement in pay may be made without change in assignment up to $1,800 a year, with quarters, subsistence, and laundry. In the Veterans' Bureau advancement in pay may be made without change in assignment up to $2,500 a year.

The duties of this position are to purchase the food supplies for all messes operated in the hospital; to plan all menus, both for patients on ordinary diets and diets with reference to special diseases; and to supervise the preparation and serving of all dietaries in the hospital, both to patients and personnel.

Applicants must have been graduated from a course of at least two years in home economics in a recognized college, such course to have included at least one year in chemistry, one year in biological science (including physiology and bacteriology), and one year in food preparations; also courses in mass cooking, in nutrition, and in dietetics. In addition, applicants must have had at least three months of graduate experience as student dietitian in a hospital or other institution for the care of the sick of not less than 40 beds.

Competitors will not be required to report for examination at any place, but will be rated on their education, training, and experience.

Full information regarding the above-mentioned examinations and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the board of United States civil-service examiners at the post office or customhouse in any city.

DEATHS DURING WEEK ENDED JUNE 13, 1925

Summary of information received by telegraph from industrial insurance companies for week ended June 13, 1925, and corresponding week of 1924. (From the Weekly Health Index, June 16, 1925, issued by the Bureau of the Census, Department of Commerce)

	Week ended June 13, 1925	Corresponding week, 1924
Policies in force	60, 189, 649	56, 324, 470
Number of death claims	12, 660	10, 877
Death claims per 1,000 policies in force, annual rate	11. 0	10. 1

Deaths from all causes in certain large cities of the United States during the week ended June 13, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, June 16, 1925, issued by the Bureau of the Census, Department of Commerce)

City	Week ended June 13, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended June 13, 1925 [2]
	Total deaths	Death rate [1]		Week ended June 13, 1925	Corresponding week, 1924	
Total (64 cities)	8,103	15.3	[3] 11.8	871	[3] 736	74
Akron	26			4	2	44
Albany [4]	45	19.6	22.9	7	6	152
Atlanta	77			14	6	
Baltimore [4]	338	22.1	11.0	26	19	78
Birmingham	93	23.6	16.4	13	12	
Boston	242	16.1	14.0	22	28	58
Bridgeport	23			2	3	32
Buffalo	170	16.0	12.0	20	20	81
Cambridge	42	19.5	18.6	6	5	103
Camden	45	18.2	12.8	7	7	111
Chicago [4]	670	11.7	11.4	59	70	52
Cincinnati	127	16.2	15.2	2	14	12
Cleveland	165	9.2	10.1	20	28	50
Columbus	72	13.4	11.5	9	10	83
Dallas	54	14.6	14.7	13	12	
Denver	73	13.6	13.8	3	5	
Des Moines	20	7.0	9.3	3	1	51
Detroit	247			46	40	79
Duluth	22	10.4	9.1	5	4	108
Erie	25			4	4	78
Fall River [4]	47	20.2	14.2	7	10	101
Flint	16	6.4	8.4	3	3	47
Fort Worth	29	9.9	7.7	4	2	
Grand Rapids	37	12.6	10.9	2	4	31
Houston	37	11.7	11.7	8	1	
Indianapolis	69	10.0	12.0	3	9	21
Jersey City	103	17.0	9.7	15	10	106
Kansas City, Kans	29	12.2	15.4	5	6	105
Kansas City, Mo	67	9.5	12.8	16	6	
Los Angeles	220			31	28	85
Louisville	70	14.1	10.9	11	6	96
Lowell	31	13.9	17.6	3	5	52
Lynn	21	10.5	9.1	1	3	27
Memphis	66	19.7	16.3	10	10	
Milwaukee	103	10.7	8.8	11	12	51
Minneapolis	84	10.3	11.7	12	8	64
Nashville [4]	42	16.1	16.5	7	4	
New Bedford	31	12.0	9.0	4	5	66
New Haven	43	12.5	11.0	1	4	13
New Orleans	137	17.2	22.4	22	26	
New York	2,054	17.5	10.8	208	142	83
Bronx borough	268	15.5	9.5	18	10	62
Brooklyn borough	680	15.9	8.9	83	44	85
Manhattan borough	863	19.9	13.2	89	71	93
Queens borough	188	17.1	8.5	15	12	70
Richmond borough	55	21.4	17.6	3	5	54
Newark, N. J	145	16.7	10.2	18	12	82
Norfolk	32			6	9	111
Oakland	51	10.5	7.8	7	5	81
Oklahoma City	34			3	1	
Omaha	57	14.0	16.5	3	8	31
Paterson	49	18.0	7.8	6	2	101
Philadelphia	907	23.9	11.4	88	50	111
Pittsburgh	181	14.9	12.7	26	16	86
Portland, Oreg	61	11.3	9.2	7	2	70
Providence	85	18.1	12.8	11	11	88
Richmond	40	11.2	18.4	5	9	60
Rochester	87	13.7	10.9	11	7	88
St. Louis	192	12.2	13.3	19	13	
St. Paul	72	15.3	12.8	6	1	51
Salt Lake City [4]	33	13.1	14.2	7	3	110
San Antonio	64	16.8	16.6	16	15	
San Francisco	143	13.4	13.5	5	8	29

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.
[3] Data for 63 cities.
[4] Deaths for week ended Friday, June 12, 1925.

Deaths from all causes in certain large cities of the United States during the week ended June 13, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924—Continued

City	Week ended June 13, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate, week ended June 13, 1925
	Total deaths	Death rate		Week ended June 13, 1925	Corresponding week, 1924	
San Diego	31	16.1		3		70
Schnectady	28	14.3	7.3	5	2	141
Seattle	58			6	7	58
Somerville	34	17 4	8 3	8	1	214
Spokane	35	16 8	9 0	2	0	45
Springfield, Mass	50	17.1	12 6	10	4	149
Syracuse	35	9.5	11.6	2	6	25
Tacoma	24	12.0	12.1	2	2	47
Toledo	70	12.7	12.8	7	10	63
Trenton	69	27.3	14 9	6	6	99
Washington, D. C	141	14.8	11.8	10	8	56
Waterbury	26			4	3	86
Wilmington, Del	39	16 7	9.6	3	1	68
Worcester	42	11.0	9 1	5	7	58
Yonkers	22	10.3	7 6	2	4	44
Youngstown	22	7.2	10.1	3	6	37

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease withou knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATES REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended June 20, 1925

ARIZONA

	Cases
Diphtheria	1
Measles	2
Mumps	1
Poliomyelitis	2
Scarlet fever	8
Tuberculosis	7
Typhoid fever	7
Whooping cough	8

ARKANSAS

	Cases
Chicken pox	9
Diphtheria	5
Hookworm disease	2
Influenza	10
Malaria	66
Measles	5
Mumps	21
Paratyphoid fever	1
Pellagra	15
Poliomyelitis	1
Scarlet fever	2
Smallpox	2
Tuberculosis	5
Typhoid fever	38
Whooping cough	30

COLORADO
(Exclusive of Denver)

	Cases
Chicken pox	8
Diphtheria	6
Measles	1
Mumps	10
Scarlet fever	10
Tuberculosis	28
Whooping cough	7

CONNECTICUT

	Cases
Chicken pox	70
Diphtheria	32

CONNECTICUT—continued

	Cases
Dysentery (bacillary)	1
German measles	44
Malaria	4
Measles	163
Mumps	12
Pneumonia (all forms)	43
Poliomyelitis	1
Scarlet fever	39
Septic sore throat	1
Tuberculosis (all forms)	38
Typhoid fever	4
Whooping cough	75

DELAWARE

	Cases
Chicken pox	1
Measles	14
Poliomyelitis	1
Scarlet fever	1
Tuberculosis	5

FLORIDA

	Cases
Cerebrospinal meningitis	1
Chicken pox	10
Diphtheria	11
Influenza	49
Malaria	13
Measles	4
Mumps	52
Pneumonia	110
Poliomyelitis	3
Rabies	1
Scarlet fever	1
Smallpox	4
Tetanus	4
Tuberculosis	80
Typhoid fever	21
Whooping cough	20

GEORGIA

	Cases
Chicken pox	10
Conjunctivitis	1
Dengue	2
Diphtheria	1
Dysentery	36
German measles	1
Hookworm disease	3
Influenza	3
Malaria	65
Measles	8
Mumps	14
Paratyphoid fever	5
Pellagra	12
Pneumonia	7
Scarlet fever	3
Septic sore throat	5
Smallpox	4
Tuberculosis	10
Typhoid fever	68
Whooping cough	44

ILLINOIS

	Cases
Cerebrospinal meningitis—Cook County	2
Diphtheria:	
Cook County	66
Scattering	13
Influenza	6
Lethargic encephalitis—Cook County	1
Measles	823
Pneumonia	134
Poliomyelitis:	
Cook County	1
Piatt County	1
Scarlet fever:	
Cook County	144
Kane County	15
Madison County	14
Scattering	62
Smallpox:	
Franklin County	17
Scattering	41
Tuberculosis	307
Typhoid fever	21
Whooping cough	237

IOWA

	Cases
Diphtheria	12
Scarlet fever	10
Smallpox	21
Typhoid fever	2

KANSAS

	Cases
Chicken pox	43
Diphtheria	6
Influenza	20
Measles	14
Mumps	64
Pneumonia	34
Scarlet fever	22
Smallpox	24
Tetanus	1
Tuberculosis	56
Typhoid fever	9
Vincent's angina	2
Whooping cough	44

[1] Week ended Friday, June 19, 1925.

LOUISIANA

	Cases
Diphtheria	7
Malaria	24
Paratyphoid fever	1
Pellagra	16
Pneumonia	16
Scarlet fever	7
Smallpox	9
Tuberculosis	32
Typhoid fever	81
Whooping cough	26

MAINE

	Cases
Cerebrospinal meningitis	1
Chicken pox	25
Conjunctivitis	1
Diphtheria	9
Dysentery	2
German measles	4
Measles	3
Mumps	53
Pneumonia	16
Scarlet fever	13
Tuberculosis	10
Typhoid fever	3
Whooping cough	1

MARYLAND [1]

	Cases
Cerebrospinal meningitis	1
Chicken pox	90
Diphtheria	13
Dysentery	3
German measles	1
Influenza	8
Lethargic encephalitis	1
Malaria	1
Measles	101
Mumps	67
Paratyphoid fever	1
Pneumonia:	
Broncho	19
Lobar	13
Poliomyelitis	2
Scarlet fever	21
Tuberculosis	49
Typhoid fever	10
Vincent's angina	1
Whooping cough	105

MASSACHUSETTS

	Cases
Cerebrospinal meningitis	2
Chicken pox	151
Conjunctivitis (suppurative)	16
Diphtheria	74
German measles	188
Hookworm disease	1
Influenza	2
Lethargic encephalitis	8
Malaria	1
Measles	640
Mumps	31
Ophthalmia neonatorum	27
Pneumonia (lobar)	67
Scarlet fever	112

MASSACHUSETTS—continued

	Cases
Septic sore throat	3
Tetanus	1
Tuberculosis (pulmonary)	133
Tuberculosis (other forms)	28
Typhoid fever	7
Whooping cough	119

MICHIGAN

Diphtheria	45
Measles	449
Pneumonia	78
Scarlet fever	202
Smallpox	28
Tuberculosis	70
Typhoid fever	3
Whooping cough	174

MONTANA

Chicken pox	2
Diphtheria	1
German measles	4
Influenza	1
Measles	2
Mumps	2
Rocky Mountain spotted fever.	
Hardin	1
Laurel	1
Scarlet fever	21
Smallpox	5
Tuberculosis	5
Whooping cough	2

NEW JERSEY

Cerebrospinal meningitis	1
Chicken pox	231
Diphtheria	60
Influenza	3
Leprosy	2
Measles	362
Pneumonia	63
Poliomyelitis	4
Scarlet fever	97
Smallpox	3
Typhoid fever	5
Whooping cough	197

NEW MEXICO

Chicken pox	2
Measles	3
Mumps	2
Pneumonia	2
Puerperal septicemia	1
Tuberculosis	16
Typhoid fever	5
Whooping cough	8

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	4
Diphtheria	81
Influenza	3
Lethargic encephalitis	2
Measles	666
Pneumonia	122
Poliomyelitis	3
Scarlet fever	136
Smallpox	12
Typhoid fever	14
Whooping cough	193

[1] Deaths.

NORTH CAROLINA

	Cases
Cerebrospinal meningitis	1
Chicken pox	50
Diphtheria	19
German measles	12
Measles	5
Scarlet fever	8
Smallpox	49
Typhoid fever	49
Whooping cough	122

OREGON

Cerebrospinal meningitis	2
Chicken pox	2
Diphtheria:	
Portland	15
Scattering	11
Influenza	1
Mumps	9
Pneumonia	[1] 9
Scarlet fever	12
Smallpox	7
Tuberculosis	11
Typhoid fever	2
Whooping cough	9

SOUTH DAKOTA

Cerebrospinal meningitis	1
Diphtheria	3
Mumps	3
Pneumonia	1
Scarlet fever	5
Smallpox	4
Typhoid fever	1

TEXAS

Cerebrospinal meningitis	2
Chicken pox	10
Diphtheria	6
Influenza	4
Measles	13
Mumps	9
Pellagra	8
Pneumonia	2
Poliomyelitis	6
Scarlet fever	14
Smallpox	7
Tuberculosis	17
Typhoid fever	20
Whooping cough	34

VERMONT

Chicken pox	12
Measles	32
Mumps	9
Scarlet fever	5
Whooping cough	5

VIRGINIA

Smallpox	6
Typhus fever—Prince George County	2

WEST VIRGINIA

Diphtheria	2
Scarlet fever	11
Smallpox	4

Reports for Week Ended June 13, 1925

DISTRICT OF COLUMBIA

	Cases
Cerebrospinal meningitis	1
Chicken pox	4
Diphtheria	6
Lethargic encephalitis	1
Measles	28
Pneumonia	26
Scarlet fever	5
Tuberculosis	26
Typhoid fever	2
Whooping cough	14

NORTH DAKOTA

	Cases
Chicken pox	7
Diphtheria	2
German measles	7
Mumps	2
Pneumonia	2
Scarlet fever	12
Smallpox	7
Tuberculosis	2
Typhoid fever	1
Whooping cough	35

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week·

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
April, 1925										
Montana	2	36	14		97			144	35	5
Utah	2	39	548		18			35	0	10
May, 1925										
Alabama	1	38	434	287	59	173	5	153	511	147
Delaware	0	10	1		30	0		18	4	1
District of Columbia	0	65	3	0	151	0	0	92	4	9
Florida	1	31	71	35	7	9	3	12	24	59
Maryland	3	114	122	3	145	0	2	224	4	21
Minnesota	1	341	28		189	0	1	1,033	83	13
New Jersey	6	300	39		2,106		3	985	37	27
New York	14	1,573	280	7	3,667		14	2,399	31	140
North Dakota	0	20	17		13		2	166	19	2
Ohio	9	329	94	1	1,976	0	1	1,569	331	57
Oklahoma	3		455	131	18	41	1	145	54	85
Pennsylvania	8	880		4	8,159		2	2,358	37	74
Rhode Island	2	29	2				1	75	11	3
Virginia	0	48	109		628		1	210	85	25
Wyoming	1	21	12		23			18	1	

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named:

Oakland, Calif.

(Including other East Bay communities)

Week ended June 6, 1925:	
Number of rats trapped	1,530
Number of rats found to be plague infected	0
Number of squirrels examined	589
Number of squirrels found to be plague infected	0
Totals:	
Number of rats trapped Jan. 1 to June 6, 1925	51,350
Number of rats found to be plague infected	21
Number of squirrels examined May 1 to June 6, 1925	2,574
Number of squirrels found to be plage infected	0

Date of discovery of iast plague-infected rat, Mar. 4, 1925.

Date of last human case, Sept. 10, 1919.

New Orleans, La.

Week ended June 6, 1925:	
Number of vessels inspected	243
Number of inspections made	613
Number of vessels fumigated with cyanide gas	14
Number of rodents examined for plague	4, 949
Number of rodents found to be plague infected	0
Totals, Dec. 5, 1924, to June 6, 1925:	
Number of rodents examined for plague	118, 609
Number of rodents found to be plague infected	12

Date of discovery of last plague-infected rat, Jan. 17, 1925.
Date of last human case occurring in New Orleans, Aug. 20, 1920.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended June 6, 1925, 34 States reported 1,344 cases of diphtheria. For the week ended June 7, 1924, the same States reported 1,557 cases of this disease. One hundred and one cities, situated in all parts of the country and having an aggregate population of more than 28,700,000, reported 872 cases of diphtheria for the week ended June 6, 1925. Last year for the corresponding week they reported 918 cases of diphtheria. The estimated expectancy for these cities was 882 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty-one States reported 6,162 cases of measles for the week ended June 6, 1925, and 9,208 cases of this disease for the week ended June 7, 1924. One hundred and one cities reported 3,374 cases of measles for the week this year and 3,199 cases last year.

Scarlet fever.—Scarlet fever was reported for the week as follows: 34 States—this year, 2,830 cases; last year, 2,747 cases; 101 cities—this year, 1,475 cases; last year, 1,234; estimated expectancy, 800 cases.

Smallpox.—For the week ended June 6, 1925, 34 States reported 819 cases of smallpox. Last year for the corresponding week they reported 1,292 cases. One hundred and one cities reported smallpox for the week as follows: 1925, 256 cases; 1924, 463 cases; estimated expectancy, 107 cases. These cities reported 12 deaths from smallpox for the week this year.

Typhoid fever.—Five hundred and nineteen cases of typhoid fever were reported for the week ended June 6, 1925, by 33 States. For the corresponding week of 1924 the same States reported 296 cases. One hundred and one cities reported 136 cases of typhoid fever for the week this year, and 90 cases for the corresponding week last year. The estimated expectancy for these cities was 72 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia (combined) were reported for the week by 101 cities as follows: 1925, 746 deaths; 1924, 606 deaths.

City reports for week ended June 6, 1925

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine.									
Portland	73, 129	3	2	0	0	0	1	12	0
New Hampshire:									
Concord	22, 408	0	0	0	0	0	0	0	0
Manchester	81, 383	0	1	0	0	0	0	0	0
Vermont:									
Barre	[1] 10, 008	1	0	0	0	0	1	5	0
Burlington	23, 613	0	1	0	0	0	1	7	0
Massachusetts:									
Boston	770, 400	--------	54	25	3	1	220	--------	19
Fall River	120, 912	5	3	5	0	0	1	0	0
Springfield	144, 227	3	2	1	0	0	5	3	0
Worcester	191, 927	15	4	1	1	0	19	2	3
Rhode Island:									
Pawtucket	68, 799	3	1	1	0	0	0	0	0
Providence	242, 378	0	9	5	--------	0	4	0	2
Connecticut:									
Bridgeport	[1] 143, 555	7	5	8	0	0	6	0	1
Hartford	[1] 138, 036	0	6	6	0	0	8	7	3
New Haven	172, 967	8	4	0	1	0	86	0	1
MIDDLE ATLANTIC									
New York:									
Buffalo	536, 718	8	12	5	0	1	198	0	32
New York	5, 927, 625	351	251	323	16	18	305	55	174
Rochester	317, 867	1	6	4	--------	1	149	8	8
Syracuse	184, 511	19	6	2	--------	0	10	6	5
New Jersey:									
Camden	124, 157	2	3	6	--------	0	39	0	6
Newark	438, 699	64	13	11	0	0	108	3	15
Trenton	127, 390	2	4	2	0	1	2	0	2
Pennsylvania:									
Philadelphia	1, 922, 788	104	60	110	--------	1	322	19	52
Pittsburgh	613, 442	39	19	15	--------	0	304	12	36
Reading	110, 917	8	2	4	0	0	92	2	2
Scranton	140, 636	2	3	5	0	1	2	0	7
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	406, 312	5	7	9	0	0	1	8	8
Cleveland	888, 519	139	20	14	1	0	15	14	25
Columbus	261, 082	8	3	3	0	2	10	1	5
Toledo	268, 338	30	4	4	--------	0	123	0	5
Indiana:									
Fort Wayne	93, 573	4	2	0	0	0	15	0	0
Indianapolis	342, 718	50	6	1	--------	1	63	5	9
South Bend	76, 709	10	1	1	0	0	5	0	4
Terre Haute	68, 939	4	1	0	0	0	47	0	0
Illinois:									
Chicago	2, 886, 121	71	96	55	5	6	552	22	58
Cicero	55, 968	3	2	2	0	0	21	0	1
Springfield	61, 833	15	1	0	0	0	39	15	1

[1] Population Jan. 1, 1920.

City reports for week ended June 6, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria: Cases, estimated expectancy	Diphtheria: Cases reported	Influenza: Cases reported	Influenza: Deaths reported	Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
EAST NORTH CENTRAL—continued.									
Michigan:									
Detroit	995,668	119	44	34	5	5	33	8	30
Flint	117,968	5	4	0	0	0	29	0	4
Grand Rapids	145,947	4	2	0	0	0	162	0	1
Wisconsin:									
Madison	42,519	4	0	0	4	0	8	0	0
Milwaukee	484,595	36	12	12	0	0	154	56	7
Racine	64,393	10	1	3	0	0	50	15	1
Superior	[1] 39,671	1	1	0	0	0	1	...	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	106,289	3	1	0	0	0	1	0	1
Minneapolis	409,125	97	13	22	...	1	17	2	5
St. Paul	241,891	83	14	12	...	0	9	25	4
Iowa:									
Davenport	61,262	0	1	0	0	...	3	0	...
Des Moines	140,923	0	1	2	0	...	0	0	...
Sioux City	79,662	22	1	0	0	...	0	4	...
Waterloo	39,667	6	0	0	0	...	0	5	...
Missouri:									
Kansas City	351,819	10	6	4	1	1	3	12	6
St. Joseph	78,232	1	1	0	0	0	0	1	3
St. Louis	803,853	19	38	50	0	0	25	4	...
North Dakota:									
Fargo	24,841	1	0	0	0	0	0	9	0
Grand Forks	14,547	7	0	0	...	...	0	0	...
South Dakota:									
Sioux Falls	29,206	0	0	0	0	0	0	0	0
Nebraska:									
Lincoln	58,761	5	1	1	...	0	0	2	0
Omaha	204,382	11	3	1	0	0	0	0	6
Kansas:									
Topeka	52,555	10	1	0	1	0	0	22	1
Wichita	79,261	11	1	2	0	0	0	0	0
SOUTH ATLANTIC									
Delaware:									
Wilmington	117,728	4	1	4	0	0	27	1	2
Maryland:									
Baltimore	773,580	90	15	22	10	1	30	55	34
Cumberland	32,361	0	0	0	0	0	0	0	0
Frederick	11,301	0	0	1	0	0	0	0	0
District of Columbia:									
Washington	[1] 437,571	9	8	10	0	0	27	...	12
Virginia:									
Lynchburg	30,277	1	0	0	0	0	0	17	0
Norfolk	159,089	6	1	0	0	0	4	29	0
Richmond	181,044	7	1	0	0	2	20	6	3
Roanoke	55,502	1	1	0	0	0	32	0	1
West Virginia:									
Charleston	45,597	...	0	...	...	...	...	...	...
Huntington	57,918	0	0	0	0	...	0	0	...
Wheeling	[1] 56,208	...	1	...	...	...	...	...	...
North Carolina:									
Raleigh	29,171	11	0	0	0	0	0	0	1
Wilmington	35,719	...	0	...	...	...	...	...	...
Winston-Salem	56,230	8	0	1	0	0	5	7	1
South Carolina:									
Charleston	71,245	0	0	2	0	0	0	0	1
Columbia	39,688	1	1	0	0	0	0	2	0
Greenville	25,789	2	0	0	0	0	0	1	0
Georgia:									
Atlanta	222,963	16	1	4	15	0	0	4	14
Brunswick	15,937	6	0	0	0	0	0	0	0
Savannah	89,448	0	0	0	0	0	0	1	1
Florida:									
St. Petersburg	24,403	0	0	0	0	0	0	0	0
Tampa	56,050	0	1	0	0	0	0	1	0

[1] Population Jan. 1, 1920.

City reports for week ended June 6, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL									
Kentucky:									
Covington	57,877	1	1	1		0	0	0	2
Louisville	257,671	3	3	1	1	3	5	0	8
Tennessee:									
Memphis	170,067	12	2	0		3	2	0	7
Nashville	121,128	1	0	0		2	16	0	2
Alabama:									
Birmingham	195,901	2	1	0	1	1	0	1	2
Mobile	63,858	0	0	0		0	0	1	1
Montgomery	45,383		0						
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	30,635	6	0	0	0		1	2	
Little Rock	70,916	2	0	1	0	0	1	1	1
Louisiana:									
New Orleans	404,575	2	6	4	3	1	0	0	5
Shreveport	54,590	0	0		0	0	0	0	0
Oklahoma:									
Oklahoma	101,150	2	1	1	0	0	1	0	1
Texas:									
Dallas	177,274	14	3	1	0	0	2	0	3
Galveston	46,877	1	1	1	0	0	1	2	1
Houston	154,970	0	2	2	0	0	0	0	1
San Antonio	184,727	0	1	0		0	0	0	2
MOUNTAIN									
Montana:									
Billings	16,927	0	1	0	0	1	0	8	1
Great Falls	27,787	1	1	0	0	0	2	3	0
Helena	[1] 12,037		0	0	0	0	0		0
Missoula	[1] 12,668	0	1	0	0	0	0	0	1
Idaho:									
Boise	22,806	1	0	1	0	0	0	0	0
Colorado:									
Denver	272,031	19	10	5		2	2	18	6
Pueblo	43,519	0	2	0	0	0	0	2	1
New Mexico:									
Albuquerque	16,648	2	1	0	0	0	0	2	1
Arizona:									
Phoenix	33,899	0	0	0	0	0	0	0	2
Utah:									
Salt Lake City	126,241	55	2	2	0	0	0	31	1
Nevada:									
Reno	12,429	0	1	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[1] 315,685	45	4	2	0		4	56	
Spokane	104,573	6	2	11	0		1	0	
Tacoma	101,731	2	1	1	0	0	0	2	1
California:									
Los Angeles	666,853	50	34	22	5	2	47	15	24
Sacramento	69,950	4	1	3	0	0	0	2	2
San Francisco	539,038	23	24	11	2	1	5	19	5

[1] Population Jan. 1, 1920.

City reports for week ended June 6, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
NEW ENGLAND											
Maine:											
Portland	1	2	0	0	0	1	1	0	0	4	24
New Hampshire:											
Concord	0	0	0	0	0	0	0	0	0	0	9
Manchester	1	5	0	0	0	0	0	0	0	0	8
Vermont:											
Barre	1	1	0	0	0	2	0	0	0	0	4
Burlington	0	0	1	0	0	0	0	0	0	0	6
Massachusetts:											
Boston	41	64	0	0	0	14	2	4	0	--------	232
Fall River	2	5	0	0	0	3	2	0	0	0	22
Springfield	5	8	0	0	0	3	0	1	0	9	38
Worcester	6	0	0	0	0	2	1	0	0	6	50
Rhode Island:											
Pawtucket	1	2	0	0	0	1	0	0	0	1	--------
Providence	8	2	0	0	0	4	1	0	0	3	72
Connecticut:											
Bridgeport	5	13	0	0	0	3	0	0	0	2	33
Hartford	3	5	0	0	0	2	0	6	0	10	35
New Haven	3	5	0	0	0	0	1	1	0	31	70
MIDDLE ATLANTIC											
New York:											
Buffalo	18	25	0	0	0	7	0	3	0	15	173
New York	172	194	0	1	0	[1] 88	11	38	8	119	1,598
Rochester	10	36	0	0	0	4	0	3	0	8	65
Syracuse	9	2	0	0	0	1	0	0	0	7	36
New Jersey:											
Camden	2	15	0	0	0	2	0	2	0	5	33
Newark	16	20	1	0	0	8	0	3	0	62	141
Trenton	1	2	0	0	0	1	1	0	0	3	42
Pennsylvania:											
Philadelphia	63	127	0	6	0	41	5	1	1	46	504
Pittsburgh	20	87	0	0	0	7	2	1	0	15	218
Reading	2	11	0	0	0	2	0	0	0	3	38
Scranton	2	1	0	0	0	2	0	0	0	4	--------
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	8	15	2	1	0	11	0	1	0	3	136
Cleveland	17	30	1	1	0	29	1	3	0	79	271
Columbus	4	10	1	10	0	11	0	0	0	2	92
Toledo	12	7	2	0	0	3	0	0	0	20	67
Indiana:											
Fort Wayne	1	2	2	1	0	0	0	0	0	4	20
Indianapolis	11	9	7	10	0	12	0	0	0	21	120
South Bend	2	14	0	0	0	0	0	0	0	4	22
Terre Haute	1	6	1	8	1	2	0	0	0	1	14
Illinois:											
Chicago	64	172	2	5	3	45	3	3	1	99	724
Cicero	0	7	0	0	0	2	0	0	0	1	12
Springfield	1	5	1	0	0	3	1	0	0	0	26
Michigan:											
Detroit	59	98	11	2	0	18	3	5	0	110	332
Flint	4	10	1	0	0	0	0	0	0	8	20
Grand Rapids	5	28	1	3	0	1	0	1	0	12	39
Wisconsin:											
Madison	2	7	1	0	0	0	0	0	0	12	9
Milwaukee	22	12	3	40	8	9	1	0	0	33	113
Racine	4	2	0	6	0	0	0	0	0	2	9
Superior	1	0	2	0	0	0	0	0	0	--------	2

[1] Pulmonary tuberculosis only.

City reports for week ended June 6, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL											
Minnesota.											
Duluth	3	12	2	0	0	2	1	0	0	0	24
Minneapolis	25	74	9	4	0	7	1	0	0	4	102
St. Paul	16	27	5	3	0	2	1	0	0	24	58
Iowa:											
Davenport	1	0	5	0	-------	-------	0	1	-------	2	-------
Des Moines	6	0	3	0	-------	-------	0	0	-------	0	-------
Sioux City	2	1	1	9	-------	-------	0	0	-------	0	-------
Waterloo	3	0	0	9	-------	-------	0	0	-------	5	-------
Missouri:											
Kansas City	6	28	3	0	0	6	0	1	0	16	93
St Joseph	1	2	0	0	0	0	1	0	0	3	22
St. Louis	24	72	2	8	0	14	2	3	1	12	210
North Dakota.											
Fargo	0	1	0	0	0	0	0	0	0	2	1
Grand Forks	1	0	0	0	-------	-------	0	0	-------	0	-------
South Dakota:											
Sioux Falls	1	7	1	0	0	0	0	0	0	0	6
Nebraska											
Lincoln	1	0	1	0	0	0	0	0	0	6	16
Omaha	4	4	2	13	0	2	0	0	0	1	38
Kansas.											
Topeka	1	1	1	0	0	2	0	0	0	1	12
Wichita	2	3	3	0	0	0	0	0	0	35	30
SOUTH ATLANTIC											
Delaware											
Wilmington	3	3	0	1	0	2	0	1	0	0	29
Maryland.											
Baltimore	22	33	0	3	0	25	3	5	0	84	235
Cumberland	1	0	0	0	0	0	0	0	0	0	5
Frederick	1	0	0	0	0	2	0	0	0	0	4
District of Columbia:											
Washington	13	22	2	1	0	18	2	0	1	15	191
Virginia:											
Lynchburg	1	1	0	2	0	0	1	1	0	2	9
Norfolk	1	0	0	0	0	0	0	0	0	9	-------
Richmond	2	1	0	0	0	3	1	2	1	0	64
Roanoke	0	0	1	0	0	1	0	0	0	0	11
West Virginia.											
Charleston	1	-------	0	-------	-------	-------	1	-------	-------	-------	-------
Huntington	0	4	0	3	-------	-------	0	0	-------	0	-------
Wheeling	1	-------	1	-------	-------	-------	0	-------	-------	-------	-------
North Carolina:											
Raleigh	0	0	1	5	0	0	0	2	0	1	10
Wilmington	0	-------	0	-------	-------	-------	0	-------	-------	-------	-------
Winston-Salem	1	0	1	3	0	2	0	1	0	17	15
South Carolina											
Charleston	1	0	0	0	0	1	0	0	0	0	22
Columbia	0	0	0	0	0	0	1	1	0	2	-------
Greenville	0	0	1	3	0	0	0	0	0	0	1
Georgia:											
Atlanta	4	2	7	1	0	14	1	6	0	21	105
Brunswick	0	0	0	0	0	0	0	0	0	0	5
Savannah	0	0	1	0	0	5	1	0	0	3	30
Florida:											
St. Petersburg	0	0	0	0	0	0	0	0	0	0	11
Tampa	0	0	0	0	0	0	1	0	0	0	10
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	1	0	0	0	3	0	0	1	2	24
Louisville	2	12	1	3	0	6	1	1	0	4	65
Tennessee:											
Memphis	3	2	1	0	0	9	1	4	0	8	69
Nashville	2	3	1	7	0	4	2	0	0	0	39
Alabama:											
Birmingham	1	4	1	10	0	6	2	1	0	1	63
Mobile	1	0	1	0	0	1	0	1	0	0	18
Montgomery	0	-------	0	-------	-------	-------	0	-------	-------	-------	-------

City reports for week ended June 6, 1925—Continued

Division, State, and city	Scarlet fever: Cases, estimated expectancy	Scarlet fever: Cases reported	Smallpox: Cases, estimated expectancy	Smallpox: Cases reported	Smallpox: Deaths reported	Tuberculosis, deaths reported	Typhoid fever: Cases, estimated expectancy	Typhoid fever: Cases reported	Typhoid fever: Deaths reported	Whooping cough, cases reported	Deaths, all causes
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	1	0	0			1	0		6	
Little Rock	0	0	0	0	0	1	1	3	1	1	
Louisiana:											
New Orleans	2	13	3	2	0	13	3	6	1	23	156
Shreveport		0	0	2	0	0	0	1	0	0	34
Oklahoma.											
Oklahoma	1	2	5	0	0	1	0	5	0	1	21
Texas:											
Dallas	1	2	2	2	0	1	1	3	1	14	47
Galveston	0	0	0	1	0	2	1	1	0	0	13
Houston	0	3	1	0	0	2	1	4	0	0	40
San Antonio	1	0	0	0	0	6	0	1	0	0	54
MOUNTAIN											
Montana:											
Billings	1	3	1	0	0	0	1	0	0	1	9
Great Falls	1	10	1	3	0	0	0	0	0	4	9
Helena	0	2	0	1	0	0	0	0	0		7
Missoula	0	0	0	0	0	0	0	0	0	7	4
Idaho											
Boise	1	0	1	0	0	0	0	0	0	1	2
Colorado:											
Denver	9	5	1	0	0	17	0	1	0	15	80
Pueblo	1	1	0	0	0	1	0	0	0	0	14
New Mexico:											
Albuquerque	1	0	0	0	0	1	0	0	0	0	9
Arizona											
Phoenix		2		0	0	6		0	0	0	14
Utah.											
Salt Lake City	2	14	1	0	0	0	0	7	0	6	22
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	1	0
PACIFIC											
Washington.											
Seattle	7	10	2	20			1	0		111	
Spokane	4	3	4	1			0	2		29	
Tacoma	2	1	2	4	0	1	0	0	0	15	27
California:											
Los Angeles	10	22	1	36	0	26	2	0	0	51	269
Sacramento	1	0	1	3	0	2	0	0	0	6	31
San Francisco	13	16	1	2	0	7	1	1	0	34	152

Division, State, and city	Cerebrospinal meningitis: Cases	Cerebrospinal meningitis: Deaths	Lethargic encephalitis: Cases	Lethargic encephalitis: Deaths	Pellagra: Cases	Pellagra: Deaths	Poliomyelitis (infantile paralysis): Cases, estimated expectancy	Poliomyelitis: Cases	Poliomyelitis: Deaths	Typhus fever: Cases	Typhus fever: Deaths
NEW ENGLAND											
New Hampshire:											
Concord	0	0	0	0	0	0	0	1	0		
Massachusetts:											
Boston	1	0	0	0	0	0	0	0	0		
Springfield	0	0	0	0	1	0	0	0	0		
Connecticut:											
Bridgeport	0	0	1	1	0	0	0	0	0		

City reports for week ended June 6, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)			Typhus fever	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths	Cases	Deaths
MIDDLE ATLANTIC											
New York:											
Buffalo	0	0	0	0	0	0	0	0	1	......	......
New York	3	1	11	6	0	0	2	1	3	......	......
New Jersey:											
Newark	4	2	0	0	0	0	0	3	0	......	......
Pennsylvania:											
Philadelphia	0	0	2	1	0	0	0	0	0	......	......
EAST NORTH CENTRAL											
Ohio:											
Cleveland	1	1	0	0	0	0	0	0	0	......	......
Columbus	1	0	0	0	0	0	0	0	0	......	......
Illinois:											
Chicago	3	2	1	1	0	0	0	0	0	......	......
Michigan:											
Detroit	5	0	0	0	0	0	0	0	0	......	......
Wisconsin:											
Milwaukee	0	0	1	0	0	0	0	0	0	......	......
WEST NORTH CENTRAL											
Missouri:											
Kansas City	0	0	1	1	0	0	0	0	0	......	......
St. Louis	1	0	0	0	0	0	0	0	0	......	......
SOUTH ATLANTIC											
Maryland:											
Baltimore	1	1	0	0	0	0	1	0	0	......	......
Georgia:											
Atlanta	0	0	0	0	1	1	0	0	0	......	......
EAST SOUTH CENTRAL											
Alabama:											
Birmingham	0	0	0	0	0	0	0	1	0	......	......
WEST SOUTH CENTRAL											
Arkansas:											
Little Rock	0	0	0	0	1	1	0	0	0	......	......
Louisiana:											
New Orleans	1	1	0	0	1	0	0	0	0	......	......
Shreveport	0	0	0	0	0	4	......	0	0	......	......
Oklahoma:											
Oklahoma	0	0	0	1	1	0	0	0	0	......	......
Texas:											
Dallas	0	0	0	0	0	1	0	0	0	......	......
Houston	0	0	0	0	0	1	0	0	0	......	......
San Antonio	1	0	0	0	0	0	0	0	0	......	......
MOUNTAIN											
Montana:											
Helena	0	1	0	0	0	0	0	0	0	......	......
Arizona:											
Phoenix	0	0	0	0	0	0	......	1	0	......	......
PACIFIC											
Washington:											
Tacoma	1	3	0	0	0	0	0	0	0	......	......
California:											
Los Angeles	0	0	1	0	0	0	0	4	0	......	......
San Francisco	0	1	0	1	0	0	0	4	2	......	......

The following table gives the rates per hundred thousand population for 105 cities for the 10-week period ended June 6, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 105 cities reporting cases had an estimated aggregate population of nearly 29,000,000, and the 97 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, March 29 to June 6, 1925—Annual rates per 100,000 population [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23	May 30	June 6
105 cities	177	158	160	162	158	[2] 157	[3] 164	153	[4] 151	[5] 158
New England	171	166	129	144	127	109	154	127	114	129
Middle Atlantic	241	220	228	218	213	212	238	203	211	244
East North Central	93	96	110	113	110	113	110	108	106	99
West North Central	220	226	168	187	201	278	211	251	197	189
South Atlantic	81	73	102	108	104	104	85	87	[6] 77	[7] 94
East South Central	23	34	46	40	40	11	34	40	[8] 12	[8] 12
West South Central	83	107	74	79	70	65	56	42	65	42
Mountain	124	105	239	267	115	105	153	134	143	76
Pacific	374	171	168	165	206	[2] 123	[3] 138	165	168	145

MEASLES CASE RATES

	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23	May 30	June 6
105 cities	558	531	589	645	581	[2] 627	[3] 624	601	[4] 597	[5] 613
New England	957	1,011	917	1,217	1,004	984	1,188	1,051	867	872
Middle Atlantic	734	680	815	782	734	797	768	617	704	774
East North Central	736	710	742	901	761	890	854	954	913	893
West North Central	77	58	91	102	79	112	79	236	145	114
South Atlantic	209	207	256	295	305	240	329	327	[6] 256	[7] 311
East South Central	69	34	97	189	200	343	166	337	[8] 229	[8] 138
West South Central	88	51	65	37	28	32	14	23	14	23
Mountain	219	57	267	219	534	181	57	181	248	38
Pacific	209	241	154	203	162	[2] 95	[3] 178	131	165	165

SCARLET FEVER CASE RATES

	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23	May 30	June 6
105 cities	400	367	342	360	309	[2] 323	[3] 352	307	[4] 281	[5] 268
New England	534	529	350	407	430	415	358	350	211	266
Middle Atlantic	436	359	343	336	323	319	331	265	271	263
East North Central	442	422	403	433	324	366	399	413	346	317
West North Central	736	647	651	692	518	618	728	556	531	481
South Atlantic	175	152	167	175	132	106	165	146	[6] 122	[7] 133
East South Central	263	280	229	257	263	263	326	246	[8] 193	[8] 132
West South Central	51	88	60	121	111	88	74	23	65	88
Mountain	277	258	315	401	334	277	353	324	410	334
Pacific	191	174	145	148	125	[2] 151	[3] 197	162	139	151

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported Populations used are estimated as of July 1, 1923.
[2] Spokane, Wash., not included. Report not received at time of going to press.
[3] Tacoma, Wash., not included.
[4] Charleston, W. Va., and Montgomery, Ala., not included.
[5] Charleston, W. Va., Wheeling, W. Va., Wilmington, N. C., and Montgomery, Ala., not included.
[6] Charleston, W. Va , not included.
[7] Charleston, W. Va., Wheeling, W. Va., and Wilmington, N. C., not included.
[8] Montgomery, Ala., not included.

Summary of weekly reports from cities, March 29 to June 6, 1925—Annual rates per 100,000 population—Continued

SMALLPOX CASE RATES

	Week ended—									
	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23	May 30	June 6
105 cities	57	51	48	62	50	[2] 46	[3] 46	60	[4] 46	[5] 46
New England	12	2	0	2	0	2	0	0	0	0
Middle Atlantic	21	10	18	12	8	6	7	2	2	4
East North Central	24	22	27	39	30	44	56	70	58	65
West North Central	87	97	85	89	75	60	79	68	70	95
South Atlantic	49	43	53	79	63	45	37	65	[6] 10	[7] 41
East South Central	42	572	395	457	435	377	189	440	[8] 439	[8] 120
West South Central	46	51	14	42	32	28	37	130	56	32
Mountain	19	19	10	29	10	48	29	29	57	38
Pacific	255	148	162	264	206	[2] 176	[3] 191	186	168	191

TYPHOID FEVER CASE RATES

	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23	May 30	June 6
105 cities	9	10	12	16	18	[2] 14	[3] 13	19	[4] 16	[5] 25
New England	5	2	7	17	10	5	12	25	17	30
Middle Atlantic	4	9	11	14	22	13	10	19	9	26
East North Central	4	6	4	7	4	9	6	5	7	10
West North Central	2	2	2	6	12	2	0	4	10	8
South Atlantic	30	20	12	14	28	28	26	39	[6] 41	[7] 41
East South Central	17	17	34	80	46	46	63	74	[8] 48	[8] 42
West South Central	32	37	56	51	51	46	79	65	74	88
Mountain	0	19	38	29	0	0	0	19	10	76
Pacific	20	9	12	23	17	[2] 9	[3] 3	6	9	9

INFLUENZA DEATH RATES

	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23	May 30	June 6
105 cities	34	27	27	30	22	15	14	14	[4] 13	[5] 11
New England	35	32	27	30	20	10	7	5	7	2
Middle Atlantic	21	16	24	17	14	10	12	11	9	11
East North Central	38	27	24	33	23	16	11	12	14	10
West North Central	39	37	50	48	31	11	11	18	18	4
South Atlantic	28	26	12	43	26	24	10	6	[6] 12	[7] 6
East South Central	69	74	80	86	51	51	80	86	[8] 42	[8] 54
West South Central	36	46	36	25	31	15	20	24	31	5
Mountain	181	86	38	76	48	19	57	19	0	29
Pacific	29	12	29	12	12	16	12	25	8	12

PNEUMONIA DEATH RATES

	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2	May 9	May 16	May 23	May 30	June 6
105 cities	204	201	192	203	167	151	127	128	[4] 126	[5] 128
New England	251	211	206	186	149	161	134	119	114	72
Middle Atlantic	215	190	204	223	206	185	143	144	146	168
East North Central	182	190	190	211	148	130	125	125	119	114
West North Central	193	228	171	136	72	77	58	79	59	57
South Atlantic	234	238	232	191	195	156	136	134	[6] 157	[7] 150
East South Atlantic	269	343	206	286	194	160	166	137	[8] 181	[8] 132
West South Central	168	168	173	158	127	138	112	84	76	66
Mountain	162	267	210	219	124	124	162	172	76	95
Pacific	159	119	98	147	127	123	78	135	82	131

[2] Spokane, Wash., not included. Report not received at time of going to press.
[3] Tacoma, Wash., not included.
[4] Charleston, W. Va., and Montgomery, Ala., not included.
[5] Charleston, W. Va., Wheeling, W. Va., Wilmington, N. C., and Montgomery, Ala., not included.
[6] Charleston, W. Va., not included.
[7] Charleston, W. Va., Wheeling, W. Va., and Wilmington, N. C., not included.
[8] Montgomery, Ala., not included.

Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total	105	97	28, 898, 350	28, 140, 934
New England	12	12	2, 098, 746	2, 098, 746
Middle Atlantic	10	10	10, 304, 114	10, 304, 114
East North Central	17	17	7, 032, 535	7, 032, 535
West North Central	14	11	2, 515, 330	2, 381, 454
South Atlantic	22	22	2, 566, 901	2, 566, 901
East South Central	7	7	911, 885	911, 885
West South Central	8	6	1, 124, 564	1, 023, 013
Mountain	9	9	546, 445	546, 445
Pacific	6	3	1, 797, 830	1, 275, 841

FOREIGN AND INSULAR

THE FAR EAST

Wireless health news messages.—The following data for the week ended May 30, 1925, were sent by wireless from the Far Eastern Bureau of the health section of the League of Nations located at Singapore, to the headquarters at Geneva, Switzerland:

Port	Plague		Cholera		Smallpox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Calcutta	0	0		38	54	45
Bombay		8	0	0	19	15
Madras [1]						
Rangoon		4		2	28	15
Karachi	0	0	0	0	1	
Negapatam	0	0	0	0	0	0
Singapore	1	1	0	0	0	0
Port Swettenham	0	0	0	0	0	0
Penang	0	0	0	0	0	0
Batavia	0	0	0	0	0	0
Soerabaya	0	0	0	0	1	1
Samarang	0	0	0	0	0	0
Belawan Deli	0	0	0	0	0	0
Macassar	0	0	0	0	0	0
Sandakan (North Borneo)	0	0	0	0	0	0
Bangkok [2]	1		2	1	2	1
Saigon and Cholon		1		1	0	0
Hongkong	0	0	0	0	2	2
Shanghai	0	0	0	0	0	0
Manila	0	0	0	0	0	0
Colombo	1	1	0	0	0	0
Nagasaki	0	0	0	0	2	
Yokohama	0	0	0	0	1	
Shimonoseki	0	0	0	0	0	0
Kobe	0	0	0	0	0	0
Adelaide	0	0	0	0	0	0
Fremantle	0	0	0	0	0	0
Melbourne	0	0	0	0	0	0
Sydney	0	0	0	0	0	0

[1] Report not received for week ended May 30, 1925.
[2] Infected rats captured.

CHINA

Cerebrospinal meningitis—Hongkong—December 28, 1924–April 25, 1925.—During the period December 28, 1924, to April 25, 1925, 42 cases of cerebrospinal meningitis with 33 deaths were reported at Hongkong, China.

EGYPT

Plague—May 14–20, 1925—Summary and comparison, years 1924 and 1925.—During the week ended May 20, 1925, four cases of plague were reported in Egypt, making a total from January 1 to May 20, 1925, of 44 cases, as compared with 238 cases notified during the corresponding period of the year 1924.

JAVA

Mortality, 1923–24 (comparative)—Dysentery—Typhoid fever—Spread of plague—Batavia district.—Information dated March 25, 1925, shows that general health conditions in Batavia district during the year 1924 were good but that the rate of infant mortality was high. The rate of general mortality was stated as follows: European, 9.4 per 1,000 (year 1923, 9.6); native, 36.7 (year 1923, 38.8); Chinese, 40.3 (year 1923, 39.7); Arab, 36.7 (year 1923, 38.9). No epidemic prevalence was reported, but the fatality from dysentery and typhoid fever was stated to have been high. The deaths from typhoid fever were, however, 30 per cent less than in 1923. Of deaths among natives, 50 per cent were reported among children under 1 year of age.

The spread of plague in Java was stated to have been constant throughout the year, 13,345 deaths having been reported, as compared with 8,774 deaths in 1923. In the Provinces of Banjoemas, Cheribon, Kedoe, Pekalongan, Samarang, and Soerakarta the prevalence approached epidemic form. The course of the spread was stated to be apparently westward. Unofficial reports show the presence of plague at Batavia.

MAURITIUS

Plague—January–February, 1925.—During the two-month period ended February 28, 1925, 47 cases of plague with 41 deaths were reported in the island of Mauritius. Of these, 35 cases with 32 deaths occurred during the month of January and 12 cases with 9 deaths in February. For distribution of occurrence according to locality, see page 1401.

NIGERIA

Yellow fever—Lagos—June 6, 1925.—Under date of June 6, 1925, yellow fever was reported present at Lagos, Nigeria.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

Reports Received During Week Ended June 26, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Apr. 19-25, 1925: Cases, 5,165; deaths, 3,178.
Rangoon	Apr. 26-May 2	6	4	
Siam:				
Bangkok	Apr. 19-25	2		

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended June 26, 1925—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Ceylon:				
Colombo				May 3-9, 1925: One plague rodent found.
Egypt				May 14-20, 1925. Cases, 4. Jan. 1-May, 20, 1925. Cases, 44; corresponding period, 1924—cases, 238
India				Apr. 19-25, 1925. Cases, 4, 290; deaths, 3,828.
Rangoon	Apr. 26-May 2	38	33	
Java.				
East Java—				
Soerabaya	Apr 9-15	1	1	
West Java—				
Batavia	Apr. 25-May 1	9	9	Province.
Mauritius				Jan.-Feb, 1925: Cases, 47; deaths, 41.
Towns—				
Flacq	Jan. 1-31	1	1	
Moka	do	1	1	
Pamplemousses	Jan. 1-31	2		
Do	Feb. 1-28	8	6	
Plaines Wilhems	Jan 1-31	1	1	
Do	Feb. 1-28	2	1	
Port Louis	Jan 1-31	30	29	
Do	Feb. 1-28	2	2	

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Arabia:				
Aden	May 17-23	1	1	
Brazil:				
Porto Alegre	Apr. 19-25		1	
Sao Paulo				Aug 25-Oct 5, 1924 Cases, 30, deaths, 35
British South Africa:				
Northern Rhodesia	Apr. 13-20	1	1	Native.
Canada.				
British Columbia—				
Vancouver	May 25-31	4		
New Brunswick—				
Fredericton	May 24-30	1		
Ontario—				
Kingston	May 24-June 6	5		
China				
Amoy	May 3-9		3	
Canton	Apr. 26-May 9			Present.
Chungking	May 10-16			Prevalent.
Manchuria—				
Harbin	May 5-12	2		
Great Britain:				
England and Wales	May 10-23	293		
London	May 10-16	2		
Newcastle-on-Tyne	May 24-30	2		
India				Apr. 19-25, 1925. Cases, 6,692, deaths, 1,642.
Karachi	May 10-16	1		
Madras	May 10-16	26	15	
Rangoon	Apr. 26-May 2	50	21	
Japan.				
Nagasaki	May 11-24	9	3	
Java.				
East Java—				
Soerabaya	Apr. 9-15	44	9	
West Java—				
Batavia	Apr. 25-May 1	1		
Mexico.				
Mexico City	May 17-23	1		Including municipalities in Federal District.
Tampico	May 21-31	2		
Portugal:				
Oporto	May 24-30		1	
Siam				
Bangkok	Apr. 19-25	5		
Switzerland:				
Berne	May 3-9	1		
Lucerne	Apr. 1-30	23		
Turkey:				
Constantinople	May 1-15	2		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended June 26, 1925—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Brazil:				
Porto Alegre	Apr. 26-May 2		2	
Mexico:				
Mexico City	May 17-23	6		Including municipalities in Federal District.
Palestine:				
Bir-tuvia	May 12-18	2		
Turkey:				
Constantinople	May 1-15	4		

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Nigeria:				
Lagos	June 6			Present.

Reports Received from December 27, 1924, to June 26, 1925 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
Ceylon				June 29-Dec. 27, 1924: Cases, 14; deaths, 13. Dec. 28, 1924-Jan. 24, 1925: Cases, 24; deaths, 17.
Colombo	Nov. 16-22	1		
Do	Jan. 11-24	2	2	
India				Oct. 19, 1924-Jan. 3, 1925: Cases, 27,164; deaths, 16,228. Jan. 4-Apr. 25, 1925: Cases, 42,239, deaths, 25,258.
Bombay	Nov. 23-Dec. 20	4	4	
Do	Jan. 18-24	1	1	
Calcutta	Oct. 26-Jan. 3	59	51	
Do	Jan. 4-May 2	509	448	
Madras	Nov. 16-Jan. 3	69	40	
Do	Jan. 4-May 9	145	102	
Rangoon	Nov. 9-Dec. 20	9	2	
Do	Jan. 4-Apr. 25	26	18	
Do	Apr. 26-May 2	6	4	
Indo-China				Aug. 1-Sept. 30, 1924. Cases, 14; deaths, 10. Dec. 1-31, 1924: Cases, 5; deaths, 2.
Province—				
Anam	Aug. 1-31	1	1	
Cambodia	Aug. 1-Sept. 30	6	5	
Do	Dec. 1-31	1		
Cochin-China	Aug. 1-Dec. 31	10	5	
Saigon	Nov. 30-Dec. 6	1		
Do	Mar. 15-21	1	1	
Tonkin	Dec. 1-31	1	1	
Siam:				
Bangkok	Nov. 9-29	4	2	
Do	Jan. 18-Apr. 25	17	10	

PLAGUE

Place	Date	Cases	Deaths	Remarks
Azores:				
Fayal Island—				
Castelo Branco	Nov. 25			Present with several cases.
Feteira	do	1		
St. Michael Island	Nov. 2-Jan. 3	30	13	
Do	Jan. 18-24	3	1	
Brazil:				
Bahia	Jan. 4-May 2	13	9	
Santos	Year, 1924	2		Bubonic.
British East Africa:				
Tanganyika Territory	Nov. 23-Dec. 27	17	10	
Do	Jan. 18-Mar. 14	18	12	
Uganda	Aug.-Dec., 1924	279	243	
Do	Jan. 1-31	29	28	
Canary Islands.				
Las Palmas	Jan. 21-23	2		Stated to be endemic.
Do	Feb. 4	1		Stated to have been infected with plague Sept. 30, 1924.
Do	Mar. 26	1	1	
Realejo Alto	Dec. 19	3	1	Vicinity of Santa Cruz de Teneriffe.
Teneriffe—				
Santa Cruz	Jan. 3	1		In vicinity.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 26, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Celebes:				
Macassar	Oct. 29			Epidemic.
Ceylon:				
Colombo	Nov. 9-Jan. 3	12	9	
Do	Jan. 4-May 9	22	23	One plague rodent found.
China:				
Foochow	Dec. 28-Jan. 3			Present.
Nanking	Nov. 23-Mar. 7			Do.
Shing Hsien	October, 1924		790	
Ecuador				Mar. 16-Apr. 15, 1925: Cases, 10, deaths, 4.
Chimborazo Province—				
Alausi District	Jan 14		14	At 2 localities on Guayaquil & Quito Ry.
Daule	Mar. 16-31	1		
Guayaquil	Nov. 16-Dec. 31	9	3	Rats taken, 27,004; found infected, 92.
Do	Jan. 1-May 15	72	33	Rats taken, 99,017; found infected, 395.
Naranjito	Feb 16-Mar. 15	1		
Yaguachi	Feb. 1-Mar. 15	2	1	
Egypt				Year 1924. Cases, 373. Jan. 1-May 20, 1925. Cases, 44.
City—				
Suez	Apr 2-May 13	3	2	
Province—				
Assiout	May 2	1	1	
Beni-Souef	Jan 18	1	1	
Do	May 7-13	10		
Dakhalia	Jan 7	1	1	
Fayoum	Apr 5-May 13	5	3	
Girgeh	Jan 9-Apr. 5	2	2	
Kalioubiah	Jan 5-Apr 22	5	2	
Menoufieh	Jan 1-Apr. 9	8	4	
Minia	Apr. 1-May 5	4	2	
Gold Coast				September - December, 1924; deaths, 52.
Greece				
Patras	Apr. 5	1		
Hawaii				
Honokaa	Nov. 4	1		Plague-infected rodents found Dec. 9, 1924, Jan. 15, Apr. 28 and 30, 1925 Vicinity Pacific Sugar Mill, Island of Hawaii.
India				Oct. 19, 1924, to Jan. 3, 1925: Cases, 28,154; deaths, 21,505. Jan. 4-Apr. 4, 1925 Cases, 65,576; deaths, 58,027
Do				Apr 12-25, 1925. Cases, 9,700; deaths, 8,477.
Bombay	Nov. 22-Jan. 3	4	3	
Do	Jan. 4-Apr. 25	91	85	
Calcutta	Jan. 18-24	1	1	
Karachi	Nov. 30-Dec. 6	2	1	
Do	Jan. 4-Feb. 21	12	11	
Do	Mar. 29-Apr. 25	6	7	
Do	May 3-9	5	3	
Madras Presidency	Nov. 23-Jan. 3	685	487	
Do	Jan. 4-24	658	511	
Do	Mar. 8-14	80	48	
Do	Apr. 5-25	70	42	
Rangoon	Oct 26-Jan. 3	26	25	
Do	Jan. 4-May 2	283	248	
Indo-China				Aug. 1-Sept. 30, 1924: Cases, 25; deaths, 20. Dec. 1-31, 1924: Cases, 11; deaths, 11. Corresponding month, 1923: Cases, 15; deaths, 5.
Province—				
Anam	Aug. 1-Sept. 30	4	4	
Do	Dec 1-31	5	5	
Cambodia	Aug. 1-Sept. 30	18	15	
Do	Dec. 1-31	6	6	
Cochin-China	do	3	1	
Saigon	Dec. 25-31	1	1	Including 100 square kilometers of surrounding territory.
Do	Jan. 11-17	2	1	Do.
Iraq	June 29-Jan. 3	20	14	
Bagdad	Mar. 22-28	1	1	
Japan	Aug 10-Dec. 6	19		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 26, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Java:				
East Java—				
Blitar	Nov. 11-22			Province of Kediri. Epidemic.
Pare	Nov. 29			Do.
Samarang	Mar. 22-28	2	2	
Sidoardja	Jan. 2			Declared epidemic, Province of Soerabaya.
Soerabaya	Nov. 16-Dec. 31	71	72	
Do	Jan. 15-Apr. 15	30	28	Mar. 29-Apr. 4, 1925: 2 plague rats found.
Soerakarta	Feb. 20			Epidemic plague in one locality.
West Java—				
Batavia	Apr 11-May 1	35	35	Province.
Cheribon	Oct. 14-Nov. 3		14	
Do	Nov. 18-Dec. 22		80	
Do	Jan. 1-14		44	
Do	Feb. 5-11		13	
Do	Feb. 19-25		13	
Do	Mar. 5-25		36	
Pasoeroean	Dec. 27			Province. Epidemic in one locality.
Pekalongan	Oct. 14-Nov. 3		29	
Do	Nov 18-Dec. 31		177	Pekalongan Province.
Do	Jan. 1-14		81	
Do	Feb. 5-11		36	
Do	Feb 19-25		38	
Do	Mar. 5-25		66	
Probalingga	Dec. 27			Province. Epidemic.
Tegal	Oct. 14-Dec. 31		26	
Do	Jan. 1-14		37	Pekalongan Province.
Do	Feb 5-11		7	
Do	Feb. 19-25		10	
Do	Mar. 5-25		11	
Madagascar:				
Fort-Dauphin (port)	Nov. 1-Dec. 15	12	5	
Do	Feb 1-15	1	1	Bubonic.
Itasy Province	Nov. 1-Dec. 15	4	2	
Do	Feb. 1-Mar. 15	6	6	
Majunga (port)	Nov. 1-30	1	1	
Moramanga Province				Nov. 1-Dec. 15, 1924: Cases, 49; deaths, 34. Jan. 16-Mar. 15, 1925. Cases, 8; deaths, 8.
Tamatave (port)	Nov. 1-30	1	1	
Tananarive Province				Oct. 16-Dec. 31, 1924: Cases, 298; deaths, 274.
Do				Jan. 1-Mar. 31: Cases, 550; deaths, 468
Tananarive (town)	Mar. 1-31	6	3	
Mauritius Island				Year 1924 Cases, 161, deaths, 144.
Do				Jan-Feb., 1925: Cases, 47; deaths, 41.
District—				
Flacq	Dec. 1-31	5	4	
Do	Jan. 1-31	1	1	
Moka	do	1	1	
Pamplemousses	Dec. 1-31	1	1	
Do	Jan. 1-Feb. 28	10	6	
Plaines Wilhems	January - December, 1924.	54	47	Not present March, April, May.
Do	Jan. 1-Feb. 28	3	2	
Port Louis	February-December, 1924.	101	92	
Do	Jan. 1-Feb. 28	32	31	
Mexico:				
Tampico	Apr. 6, 1925			Plague rat found in vicinity of Government wharves.
Morocco:				
Marrakech				Feb. 9, 1925: Present in native quarter of town. Stated to be pneumonic in form and of high mortality.
Nigeria				August-November, 1924: Cases, 387; deaths, 317.
Palestine:				
Jerusalem	Mar. 3-9	1		
Peru:				
Callao	February, 1925	6	6	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 26, 1925—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Siam:				
Bangkok	Dec. 28-Jan. 3	1	1	
Do	Jan. 25-Apr. 18	15	14	
Siberia:				
Transbaikalia—				
Turga	October, 1924		3	On Chita Railroad.
Straits Settlements:				
Singapore	Nov 9-15	1	1	
Do	Jan. 4-Apr. 25	39	30	
Syria.				
Beirut	Jan. 11-Apr. 10	2		
Turkey.				
Constantinople	Jan. 9-15	5	5	
Union of South Africa	Nov. 22-Jan. 3	28	15	In Cape Province, Orange Free State, and Transvaal.
Do	Jan. 4-Apr. 4	55	23	Do.
On vessels:				
S. S Conde				At Marseille, France, Nov. 8, 1924. Plague rat found. Vessel left for Tamatave, Madagascar, Nov. 12, 1924.
Steamship	November, 1924	1	1	At Majunga, Madagascar, from Djibuti, Red Sea port

SMALLPOX

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 31, 1924. Cases, 409. Jan. 1-20, 1925. Cases, 107
Algiers	Jan. 1-Apr. 30	16		
Arabia.				
Aden	Jan. 25-May 23	15	2	
Argentina:				
Buenos Aires	Mar. 15-21	1		
Belgium	Jan 1-Feb. 10	4		
Bolivia				
La Paz	Nov. 1-Dec. 21	20	11	
Do	Jan. 1-Mar. 31		12	
Brazil				
Pernambuco	Nov. 9-Jan. 3	100	27	
Do	Jan 4-Apr. 18	132	69	
Porto Alegre	Apr 12-25		2	
San Paulo				Aug. 25-Oct. 5, 1924: Cases, 30; deaths, 35.
British East Africa:				
Kenya—				
Mombasa	Jan. 18-Feb. 28	66	14	
Do	Mar. 8-Apr. 18	42	11	
Tanganyika Territory	Feb. 15-Mar. 28	17	2	
Zanzibar	Mar. 1-31	1		
Uganda—				
Entebbe	Oct. 1-31	4		
British South Africa:				
Northern Rhodesia	Oct 28-Dec. 15	57	2	
Do	Jan. 27-Apr. 20	13		Natives.
Southern Rhodesia	Jan. 29-Mar. 25	4	1	
Bulgaria:				
Sofia	Mar. 12-18	1		Varioloid.
Canada:				
Alberta—				
Calgary	Mar. 15-21	1		
British Columbia—				
Ocean Falls	Mar. 7-27	6		Very mild.
Vancouver	Dec. 14-Jan. 3	32		
Do	Jan. 4-Apr. 12	305		
Do	Apr. 19-May 31	21		
Victoria	Jan. 18-May 30	12		
Manitoba—				
Winnipeg	Dec. 7-Jan. 3	14		
Do	Jan. 4-Apr. 11	31		
New Brunswick—				
Northumberland	Feb 8-14	1		County.
Fredericton	May 24-30	1		
Victoria	do	1		Do
Ontario				Nov. 30-Dec. 27, 1924: Cases, 33; Dec 28, 1924, to May 30, 1925. Cases, 85; deaths, 2
Hamilton	Jan. 24-30	1		
Kingston	Apr. 12-June 6	6		
Ottawa	Mar. 29-May 9	3		
Welland	Mar. 22-Apr. 25	7		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 26, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Ceylon				July 27-Nov. 29, 1924: Cases, 27; deaths, 1.
Colombo	Jan. 18-Feb. 7	4		
Do	Mar. 8-Apr. 25	17	1	
China:				
Amoy	Nov. 9-Feb. 21			Present.
Do	Feb. 22-May 9		32	Prevalent in surrounding district.
Antung	Nov. 17-Dec. 28	5		
Do	Jan 5-Feb. 14	15	1	
Do	Mar 2-Apr. 5	9	1	
Do	Apr. 12-May 10	6		
Canton	Mar. 15-May 9			Prevalent.
Chefoo	Mar. 15-21			Prevalent. No foreign cases.
Chungking	Mar. 22-May 16			Stated to be widely prevalent.
Foochow	Nov. 2-May 2			Present.
Hongkong	Nov. 9-Jan 3	6	2	
Do	Jan. 4-Apr. 18	50	33	
Manchuria—				
Dairen	Jan. 19-Apr 12	29	5	
Harbin	Jan. 15-May 12	14		
Nanking	Jan. 4-May 9			Prevalent.
Shanghai	Dec 7-27	1	2	
Do	Jan 18-Apr. 25		9	
Do	Apr 12-25	2	1	
Chosen.				
Seoul	Dec. 1-31	1		
Do	Mar. 1-Apr. 30	3		
Colombia:				
Buenaventura	Feb. 15-Apr. 4	3		
Santa Marta	Mar. 15-28			Present in mild form in localities in vicinity.
Cuba:				
Santiago	Apr 12-18	3	1	
Czechoslovakia				April-June, 1924: Cases, 1; occurring in Province of Moravia.
Dominican Republic:				
Puerta Plata	Mar. 8-21	3		
Dutch Guiana.				
Paramaribo	Apr 20	1		
Ecuador:				
Guayaquil	Nov. 16-Dec. 15	4		
Egypt:				
Alexandria	Nov. 12-Dec. 31	10		
Do	Jan. 8-Apr. 29	10		
Cairo	Jan. 29-Feb 4	1	1	
Esthonia				Dec. 1-31, 1924; Cases, 2.
France				July-December, 1924: Cases, 81.
Do	January, 1925	10		
Boulogne-Sur-Mer	Apr. 1-30	1	1	
Dunkirk	Mar 2-8	1		From vessel In quarantine.
St. Malo	Feb. 2-8	7	1	Believed to have been imported on steamship Ruyth from Sfax, Tunis
Germany				June 29-Nov. 8, 1924: Cases, 7.
Frankfort-on-Main	Jan. 1-10	1		
Gibraltar	Dec. 8-14	1		
Do	May 4-10	2		
Gold Coast				July-December, 1924: Cases, 106; deaths, 1.
Great Britain.				
England and Wales	Nov. 23-Jan. 3	472		
Do	Jan. 4-May 23	2,848		
London	May 3-16	7		
Newcastle-on-Tyne	Jan. 18-Feb. 21	9		
Do	Mar. 1-May 30	13		
Greece				January-June, 1924: Cases, 170; deaths, 27.
Do				July-December, 1924: Cases, 38; deaths, 26.
Saloniki	Nov. 11-Dec. 22	3		
Do	Feb. 17-Mar. 2	4		
Haiti:				
Cape Haitien	Mar. 22-Apr. 2	6		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 26, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
India				Oct 19, 1924, to Jan. 3, 1925: Cases, 12,564; deaths, 2,857. Jan. 4-Apr. 25, 1925: Cases, 82,280; deaths, 19,183.
Bombay	Nov. 2-Jan 3	30	18	
Do.	Jan. 4-Apr 4	601	307	
Do.	Apr. 12-25	80	44	
Calcutta	Oct 26-Jan. 8	307	170	
Do.	Jan. 4-May 2	4,662	3,398	
Karachi	Nov. 16-Jan. 3	16	2	
Do	Jan 4-Feb. 14	52	6	
Do	Feb 22-May 16	107	29	
Madras	Nov 16-Jan. 3	122	48	
Do.	Jan 4-Mar. 7	552	212	
Do.	Mar 15-May 16	666	279	
Rangoon	Oct. 26-Jan. 3	86	28	
Do	Jan 4-Feb. 7	287	49	
Do	Feb. 15-May 2	1,318	425	
Indo-China				Aug. 1-Sept. 30, 1924; Cases, 223; deaths, 76. Dec. 1-31, 1924: Cases, 485; deaths, 114.
Province—				
Anam	Aug 1-Sept 30	49	11	
Do.	Dec. 1-31	167	26	
Cambodia	Aug 1-Sept. 30	40	9	
Do	Dec 1-31	30	13	
Cochin-China				Aug. 1-Sept. 30, 1924: Cases, 115; deaths, 49. Dec 1-31, 1924; Cases, 50; deaths, 13.
Saigon	Nov 16-Jan. 3	17	5	Including 100 square kilometers of surrounding country.
Do	Jan 4-Feb 21	32	8	
Do	Mar 1-Apr 18	58	11	Do.
Tonkin	Aug 1-Sept. 30	19	7	
Do.	Dec 1-31	238	62	
Iraq	June 29-Jan. 10	138	67	
Bagdad	Nov 9-Dec 27	2	1	
Do	Mar. 1-28	2		
Italy				June 29-Dec. 27, 1924: Cases, 63.
Jamaica				Nov. 30, 1924-Jan. 3, 1925: Cases, 50. Reported as alastrim.
Do.				Jan. 4-Apr. 25, 1925. Cases, 275. Reported as alastrim.
Kingston	Nov 30-Dec. 27	4		Reported as alastrim.
Japan				Aug. 1-Nov. 15, 1924: Cases, 4.
Nagasaki	Feb. 9-May 24	53	14	
Taiwan (Formosa)	Jan. 1-31	1		
Taihoku	Apr 4-10	1		
Java				
East Java—				
Pasoeroean	Oct. 26-Nov. 1	9	1	
Do	Nov 12-19			Epidemic in 2 native villages.
Soerabaya	Oct. 19-Dec. 31	685	212	
Do.	Jan 15-Apr. 15	665	102	
West Java—				
Batam	Oct 14-20	2		
Batavia	Oct 21-Nov 14	2		
Do.	Dec 30-Jan. 2	19	4	
Do	Apr 25-May 1	1		
Buitenzorg	Dec 25-31	1		Batavia Residency.
Cheribon	Oct 14-Nov 24	15		
Do	Jan 1-28	3		
Krawang	Jan. 15-21	1		
Pekalongan	Oct. 14-Nov. 24	22		
Do.	Dec. 25-31	3		Province.
Premalang	Jan. 8-14	1		Pekalongan Residency.
Preanger	Nov. 18-24	1		
Latvia				Oct. 1-Nov. 30, 1924: Cases, 6. Jan. 1-Mar. 31, 1925: Cases, 9.
Lithuania				Jan. 1-31, 1925: Cases, 2.
Malta				Apr. 1-30, 1925: Cases, 6.
Mexico.				
Chiapas (State)	Mar. 1			Reported severely prevalent.
Durango	Dec. 1-31		5	
Do.	Jan. 1-May 31		40	
Guadalajara	Dec. 23-29		1	
Do.	Jan. 6-June 1		21	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 26, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Mexico—Continued.				
Mexico City	Nov. 23-Dec. 27	5		Including municipalities in Federal district.
Do	Jan. 11-May 23	76		
Monterey				Jan. 24, 1925: Outbreak, Mar. 14, 1925, present.
Oaxaca (State)	Mar. 1			Reported severely prevalent.
Salina Cruz	Dec. 1-31	1	1	
Do	Feb. 22-Mar. 31	7	1	
Saltillo	Feb. 22-Apr. 11		2	
San Luis Potosi	Mar. 29-May 23		5	
Tampico	Dec. 11-31	5	4	
Do	Jan. 1-May 31	68	20	
Torreon	Apr. 1-30	1	1	
Tuxpan district	Apr. 17-May 7	20	3	
Vera Cruz	Dec. 1-Jan. 3		10	
Do	Jan 5-Apr. 19		39	
Villa Hermosa	Dec. 28-Jan. 10			Present. Locality, capital, State of Tabasco.
Yucatan (State)	Apr. 5-11			In country towns.
Nigeria				January-June, 1924: Cases, 357; deaths, 87.
Do				July-November, 1924: Cases, 87; deaths, 25.
Paraguay				
Asuncion	Jan. 4-10		1	
Persia:				
Teheran	Sept. 23-Dec. 31		12	
Do	Jan. 1-Mar. 19		19	
Peru:				
Arequipa	Nov. 24-30		1	
Do	Jan. 1-Feb. 28		4	
Philippine Islands.				
Manila	Mar. 29-Apr. 4	3		
Poland				Sept. 21-Dec. 28, 1924 Cases, 30; deaths, 2. Jan 4-Feb 28, 1925: Cases, 17, deaths, 1.
Portugal:				
Lisbon	Dec. 7-Jan. 3	17		
Do	Jan. 4-May 10	140		Jan 4-May 10, 1925. Deaths, 37.
Oporto	Nov 30-Dec. 27	3	2	
Do	Jan. 11-May 30	6	1	
Russia				January-June, 1924: Cases, 18,229; July-November, 1924: Cases, 3,810 (corrected figure).
Senegal:				
Dakar	Mar. 16-22	4		
Siam.				
Bangkok	Dec. 28-Jan 3	1	1	
Do	Jan. 18-Feb. 21		19	
Do	Mar. 1-Apr. 25	30	9	
Sierra Leone:				
Freetown	Feb. 7-Mar. 15	3		
Kaiyima	Mar. 9-15	1		
Spain:				
Barcelona	Nov. 27-Dec. 31		5	
Do	Mar. 19-25		1	
Cadiz	Nov. 1-Dec. 31		51	
Do	Jan. 1-Feb. 28		10	
Madrid	Year 1924		40	
Do	January-February		13	
Do	Apr. 1-30		3	
Malaga	Nov. 23-Jan. 3		97	
Do	Jan. 4-May 23		113	
Valencia	Nov. 30-Dec. 6	2		
Do	Feb. 15-May 2	6		
Straits Settlements:				
Singapore	Feb. 22-Apr. 18	5	1	
Switzerland:				
Berne	Mar. 15-May 9	6		
Lucerne	Nov. 1-Dec. 31	19		
Do	Jan. 1-31	24		
Do	Apr. 1-30	23		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 26, 1925—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Syria:				
Aleppo	Nov. 23-Dec. 27	13		
Do	Jan 4-Feb. 28	71	18	
Beirut	Feb. 11-Apr 10	2		
Damascus	Jan 6-Feb. 20	24		
Tripoli	July 14-Jan. 2	53		
Tunis:				
Tunis	Nov 25-Dec 29	42	35	
Do	Jan. 1-Apr. 22		315	
Do	Apr. 30-May 6		13	
Turkey:				
Constantinople	Dec. 13-19	5		
Do	Mar. 16-May 15	10	1	
Union of South Africa				Nov. 1-Dec. 31, 1924: Cases, 14. Jan 1-31, 1925: Cases, 4—natives. Mar. 1-31, 1925: Cases, 9; white, 3; native, 6.
Cape Province	Feb. 1-21			Outbreaks.
De Aar district	Nov. 9-Jan. 31			Do.
Natal	Mar. 1-7			Do.
Orange Free State	Nov. 2-Apr. 18			Do.
Ladybrand district	Jan. 15 & 31			Outbreak on farm.
Transvaal	Nov. 9-Jan. 10			Do.
Do	Feb 1-21			Outbreaks.
Uruguay				January-June, 1924: Cases, 101; deaths, 2.
Do				July-November, 1924: Cases, 53; deaths, 5.
Yugoslavia	Year 1924	330	64	
Do	Jan. 1-Feb. 28	6	1	
Belgrade	Mar 1-Apr 7	6		
On vessel:				
S. S. Eldridge	Mar. 23	1		At Port Townsend, from Yokohama and ports.
S. S. Habana	Feb 18	1		At Santiago de Cuba, from Kingston, Jamaica.
S. S. Ruyth				At St Malo, France, January, 1924, from Sfax, Tunis, believed to have imported smallpox infection.

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria				July 1-Dec. 20, 1924: Cases, 101; deaths, 14.
Algiers	Nov. 1-Dec. 31	5	1	
Do	Jan. 1-Apr. 20	14	7	In villages, department of Algiers: Cases, natives, 24; Europeans, 3.
Argentina:				
Rosario	Jan. 1-31		1	
Bolivia:				
La Paz	Nov. 1-Dec. 31	3		
Do	Jan 1-31	2		
Do	Mar. 1-31	1		
Brazil:				
Porto Alegre	Apr. 26-May 2		2	
Bulgaria				January-June, 1924: Cases, 191; deaths, 28.
Do				July-October, 1924: Cases, 5.
Sofia	Apr. 30-May 6	1		
Chile:				
Concepcion	Nov. 25-Dec. 1		1	
Do	Jan. 6-May 4		5	
Iquique	Nov. 25-Dec. 1		2	
Do	Feb. 1-Mar. 28		2	
Talcahuano	Nov. 16-Dec. 20		5	
Do	Jan. 4-May 16		2	
Valparaiso	Nov. 25-Dec. 7		4	
Do	Jan. 11-May 9		21	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 26, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
China:				
Antung	Mar. 16-22	1		
Manchuria—				
Harbin	Apr. 8-14	1		
Chosen:				
Chemulpo	Feb. 1-28	1		
Seoul	Nov. 1-30	1	1	
Do	Feb. 1-Mar. 31	6	2	
Czechoslovakia				December, 1924: Cases, 5.
Do	Jan.-Mar	68	2	
Egypt:				
Alexandria	Dec. 3-9	1	1	
Do	Mar. 12-Apr. 29	4	2	
Cairo	Oct. 1-Dec. 23	13	8	
Do	Jan. 22-Mar. 18	8	5	
Esthonia				Dec. 1-31, 1924: Cases, 5. Jan. 1-31, 1925: Cases, 4. Mar. 1-31, 1925. Cases, 2.
France				July-October, 1924: Cases, 7.
Gold Coast				Oct 1-31, 1924: 1 case.
Greece				May-June, 1924: Cases, 116;
Do				July-December, 1924: Cases, 40; deaths, 4.
Athens	Feb. 1-Apr. 10		10	
Saloniki	Nov. 17-Dec. 15	3	2	
Do	Jan. 25-Apr. 20	3		
Japan				Aug. 1 Nov. 15, 1924: Cases, 2.
Latvia				October-December, 1924: Cases, 30 Feb. 1-Mar. 31, 1925: Cases, 15
Lithuania				August-October, 1924: Cases, 15; deaths, 1.
Do				Jan. 1-31, 1925: Cases, 27, deaths, 2.
Mexico:				
Durango	Dec. 1-31		1	
Do	Mar. 15 Apr. 30	1	2	
Guadalajara	Dec. 23-29		1	
Mexico City	Nov. 9-Jan. 3	80		Including municipalities in Federal District
Do	Jan. 11-May 23	121		
San Luis Potosi	Mar. 8-May 2		2	
Tampico	May 29	1		
Morocco				November, 1924: Cases, 5.
Palestine				Nov. 12-Dec. 29, 1924: Cases, 10.
Bir-tuvia	May 12-18	2		
Ekron	Dec. 23-29	1		
Jaffa District	Apr. 28-May 11	2		
Jerusalem	do	2		
Do	Jan. 20-May 11	5		
Mikveh Israel	do	1		
Petach-Tikvah	Mar. 24-30	1		
Ramleh	Feb. 10-Mar. 23	2		
Tiberias	Feb. 24-May 11	4		
Peru:				
Arequipa	Nov. 24-Dec. 31		3	
Do	Mar. 1-31		1	
Poland				Sept 28, 1924-Jan. 3, 1925: Cases, 751; deaths, 57. Jun. 4-Feb. 11, 1925; Cases, 827; deaths, 68. Feb. 22-28, 1925: Cases, 147; deaths, 15.
Portugal:				
Lisbon	Dec. 29-Jan. 4		2	
Do	Apr. 6-12		1	
Oporto	Jan. 4-Feb. 7	2		
Rumania				January-June, 1924 Cases, 2,906; deaths, 328.
Do				July-December, 1924: Cases, 288; deaths, 38.
Constanza	Dec. 1-20	1		
Do	Feb. 1-28	2		
Russia				Jan. 1-June 30, 1924: Cases, 95,682. July-November, 1924: Cases, 14,249 (corrected figure).
Leningrad	June 29-Nov. 22	12		
Spain:				
Madrid	Year 1924		3	
Malaga	Dec. 21-27		1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 27, 1924, to June 26, 1925—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Sweden:				
Goteborg	Jan. 18–Feb. 28	2		
Tunis				July 1–Dec. 20, 1924: Cases, 40.
Tunis	Mar. 5–25	9	1	
Do	Apr. 2–May 6	25	5	
Turkey:				
Constantinople	Nov. 15–Dec. 19	6	1	
Do	Jan. 2–May 15	14	1	
Union of South Africa				Nov. 1–Dec. 31, 1924: Cases, 345; deaths, 87. Jan. 1–Mar. 31, 1925: Cases, 200; deaths, 24; native. In white population, cases, 12.
Cape Province	Nov 1–Dec. 31	126	24	
Do	Jan. 1–Mar. 31	91	12	
East London	Nov 16–22	1		
Do	Jan. 18–Apr. 4	3	2	
Port Elizabeth	Feb. 22–Mar. 7	1	1	
Natal	Nov. 1–Dec 31	130	50	
Do	Jan. 1–Mar. 31	49	7	
Durban	Feb 15–Mar. 28	4		
Orange Free State	Nov 1–Dec. 31	59	8	
Do	Jan 1–Mar. 31	41	5	
Transvaal	Nov 1–Dec. 31	30	5	
Do	Jan. 1–Mar. 31	14		
Yugoslavia				Year 1924: Cases, 319: deaths, 22, Jan. 1–Feb. 28, 1925. Cases, 87; deaths, 8.
Belgrade	Nov. 24–Dec. 28	5		
Do	Apr. 8–30	4		

YELLOW FEVER

Place	Date	Cases	Deaths	Remarks
Gold Coast	October–November, 1924.	4	4	
Nigeria:				
Lagos	June 6			Present.
Salvador.				
San Salvador	June–October, 1924.	77	28	Last case, Oct. 22, 1924.

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